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CHINA

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CHINESE COLONIZATION OF
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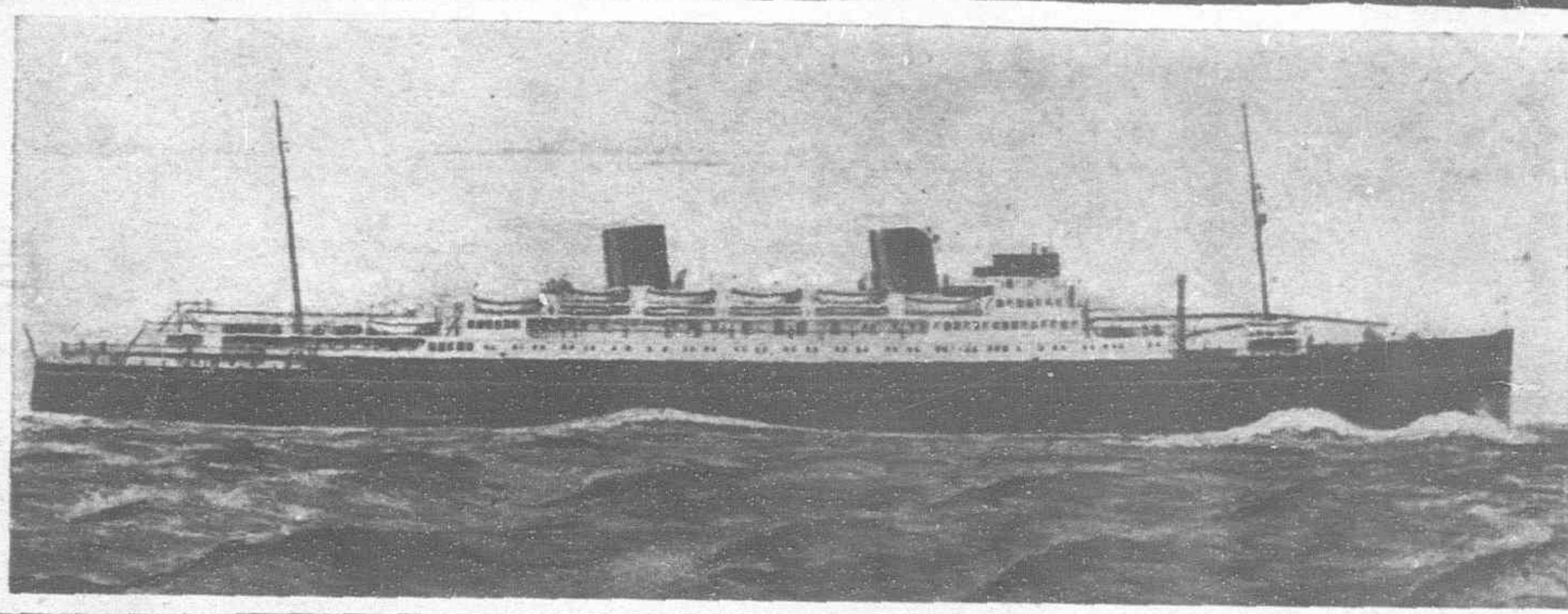
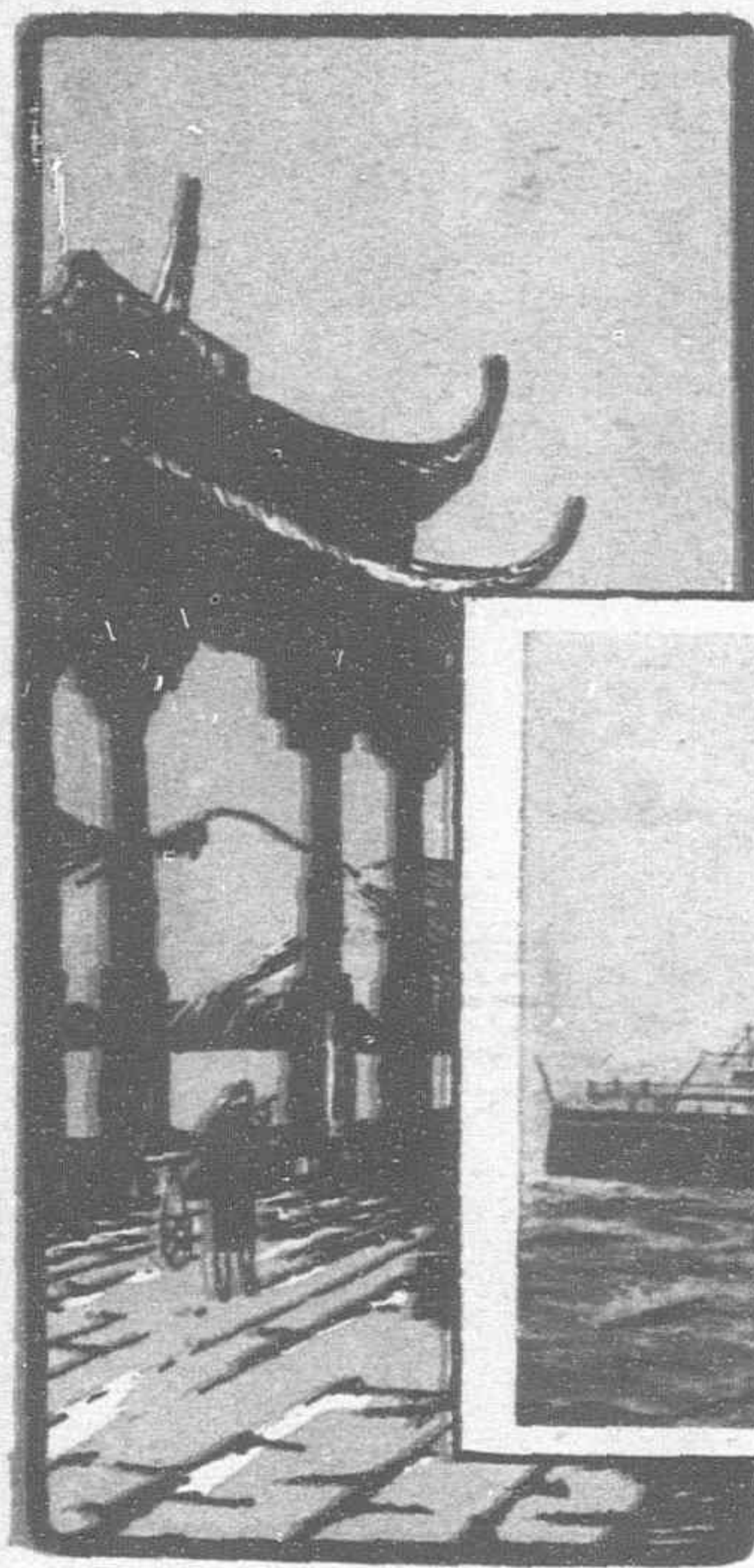
A CONDITION, NOT A
THEORY

By Dr. C. J. FOX

Vol. XXIV July, 1928 No. 7

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The Russians Leave China

By George E. Sokolsky

This article was prepared for the purpose of providing an historical record of the procedure of justice in China in a specific instance. It is here offered in evidence with regard to China's demand that the treaties be revised.

FROM January 1, 1924, until August 1927, the center of power in the Kuomintang was Michael Borodin, representative of the Third International in China and technically high advisor of the Kuomintang and the Nationalist Government of China. A recent pronouncement of the Nationalist Government begins with the phrase "When the Kuomintang was dominated by the Communist Party," which clearly defines the relationship during the period of the greatest successes of the Kuomintang, when its armies marched from Canton to the Yangtze Valley and from Hankow to Shanghai, everywhere taking possession of the territory, everywhere setting up a Government of its own conception but contrary to the political traditions of the Chinese people. The story of that period has been told only too graphically, but the ousting of the Russians and the separation between the Kuomintang and the Communist Party of China has largely been disregarded as perhaps undramatic and as an anticlimax to greater events which stirred the imagination of the world.

The relations between the Kuomintang and Soviet Russia previous to the arrival of Borodin in Canton in the fall of 1923 were sporadic and indefinite. After a failure to enlist the support of Great Britain and the United States Dr. Sun Yat-sen turned to Russia and Germany for arms, munitions, military experts, drill masters and aviators. At the Kuomintang Congress in January, 1924, this program of co-operation between the Kuomintang and Soviet Russia was endorsed by the Party and both the Kuomintang and the Nationalist Government were reorganized as counterparts of the Communist Party of Soviet Russia. As long as Dr. Sun Yat-sen lived the process of reorganization did not interfere with his pre-eminence as leader of the Party but his death, on March 12, 1923, left the Kuomintang without leadership and Borodin managed, under these circumstances, to manoeuvre the control of the Party into the hands of a small group of younger men who were by principle and self-interest bound to him.

The machinery of the Party thus came to be controlled by members of the Communist Party of China, although these men and women rarely accepted positions in the Government as a matter of policy. As the Party, however, was, in accordance with the Kuomintang constitution, the Government, control of the Party actually indicated control of the Government. By May 23, 1925, his control was so complete that the Central Executive Committee passed a resolution stating

"that it could no longer co-operate with the existing Government in Peking in the work of reorganizing China and that the only Government in the world with which the Kuomintang could work hand in hand was that of Soviet Russia, which was always in sympathy with the aspirations of the Chinese people. Consequently, the party should devote its efforts towards the securing of the co-operation of Soviet Russia for the emancipation of the Chinese people and the reform of the Chinese Republic."

It will be remembered that on May 30, 1925, the police of the International Settlement of Shanghai had occasion to shoot upon a number of Chinese. This led to a national protest against the foreigners in China and their treaties and culminated in a series of strikes and an anti-British boycott, which was particularly effective in the South and Central China. Although the occurrences in Shanghai must be regarded as accidental, the Communist Party of China was not slow to seize the opportunity thus offered to form a close contact with the masses of the Chinese people, particularly the students and laborers, whom they had not succeeded in organizing and affecting politically until this moment. The May 30 Movement was publicly organized by Mr. Li Lih-san, a Hunanese, who had heretofore never appeared in public and whose sudden emergence into political prominence was more astonishing to the Chinese than to the foreigners who were not aware of the significance of his personality. Even Chinese men of affairs, who were supporting Mr. Li Lih-san's movement, did not know, at the time, that he was a leading member of the Central Executive Committee of the Communist Party of China.

Under his leadership and due to a natural public resentment, the May 30 Movement gained in force so that, when on June 24, a similar shooting occurred at Shakee, involving the British and French Concessions in Canton, it was possible for the Communist Party of China to organize approximately 70,000 strikers from Hongkong and Canton into a picket army, which was armed and munitioned and financially supported by the State. This army, during the next two years, was able to enforce its will upon the Nationalist Government in Canton and to determine its policy. It was thus by what might be termed two accidents, the death of Dr. Sun Yat-sen and the May 30 Incident in Shanghai, that the position of the Russians and the Communist Party of China became definitely fixed in the Nationalist Movement.

There was never a period since the arrival of Mr. Borodin in Canton when there was no opposition to his presence and to the relations between the Communist Party of China, the Third Internationale and the Kuomintang. The first open opposition was the convening of the Western Hills Conference outside of Peking during the month of July, 1925, by leaders who had been associated with Dr. Sun Yat-sen in the Nationalist Movement since the organization of the Tung Men Hui before the Revolution of 1911. This effort was financially and politically supported by Mr. Sun Fo, son of Dr. Sun Yat-sen. In one of their proclamations they stated as follows:—

Certain traitors of the Kuomintang have deliberately handed over Canton to the Communists, who, in collusion with the local scoundrels are exploiting the people by all conceivable means and are openly taking bribes from those who desire to court their favor for selfish purposes. Trade and commerce have been ruined and the people are suffering the

agonies of destruction. They have even gone so far as to appoint Russian nationals as civil and military officials. It is only natural for others to say that the Kuomintang has collapsed. The so-called Central Executive Committee is nothing more than a Communist clique working for the disintegration of the Party and the devastation of Canton. Fortunately the leaders of our Party are now organizing for a decisive attack on the Communists and we will continue to fight till our disgraceful members are completely vanquished.

Almost all of the persons who attended this Conference were expelled from the reorganized Kuomintang. The protests against Russian control of the Party, however, continued. The Russians had elevated to the principalship of the Whampoa Academy, General Chiang Kai-shek, who had had some training in the Russian Red Army. He was regarded by the anti-Russians as a servant of Borodin. After Sun Yat-sen's death, General Chiang, by force of circumstance, became the military head of the Government. As more and more Whampoa cadets achieved positions of importance in the Nationalist Army, General Chiang Kai-shek's pre-eminence became less disputed, although he never enjoyed wholly undisputed leadership. Although it is undeniable that General Chiang was, in many respects, a product of the Russian alliance with the Kuomintang, nevertheless, between March and May, 1926, he sought to drive the Communists and the Russians out of Canton and almost succeeded in what is now called the *March coup d'état*. When Borodin rushed back to Canton from Mongolia and offered tremendous and unusual assistance in the pursuit of the Northern Expedition, he managed to stem the anti-Communist tide.

Public opinion in Canton was, at that time, prepared for the elimination of the Russians. I spent a fortnight in Canton at the end of April, 1926, and sensed the intense anti-Communism of that city. Had General Chiang Kai-shek remained firm in his convictions, Borodin would not have been in a position to re-establish himself, but the lure of the Northern Expedition was too great and Chiang Kai-shek not only capitulated but he turned on his associates in the anti-Communist movement and temporarily eliminated them from political life. From that moment to the arrival of the Nationalist armies in Shanghai, a year later, Borodin and the Communists were in complete control. Every military official was surrounded by Russian advisors and Communist political officials to prevent betrayal and counter-revolution.

II

During the entire course of the Northern Expedition, the relations between General Chiang Kai-shek and Borodin were personally unfriendly and distrustful. When the Nationalist Government in November-December, 1926, moved from Canton to Hankow, Borodin for the first time openly asserted his superiority. When the Nationalist officials traveled from Nanchang to Kiukiang, Borodin assumed the first place in response to the welcomes of the people and the Communists everywhere erected banners proclaiming him as the "Revolutionary Tutor." There can be no question but that this question of superiority engendered a deep personal jealousy and animosity against Borodin among Kuomintang leaders, particularly General Chiang Kai-shek. He declined to proceed to Hankow, returning instead to Nanchang where he established the General Headquarters and where he retained Chang Ching-kiang, Chairman of the Political Bureau. Borodin and the Ministers of the Government established themselves in Hankow, thus acknowledging an open and decisive split within the Kuomintang.

Borodin now utilized two weapons against General Chiang Kai-shek: one was the organizing ability and the oratory of the Communists and the semi-Communists* and the other was the capacity for personal jealousy and intrigue among Chinese generals. He utilized Mr. Teng Jen-dah to organize an anti-Chiang Kai-shek sentiment among the members of the Kuomintang and Mr. George Hsu Chen, a former Christian minister, semi-Communist and an orator, to fulminate against General Chiang Kai-shek and the officials in Nanchang. He also created an antipathy between General Chiang Kai-shek and General Tang Seng-chi, who had never been a member of the Kuomintang, but in response to whose appeal for support, General Chiang Kai-shek entered upon the Northern Expedition. General Tang Seng-chi now sought to assert his right to equal importance in military affairs with General Chiang Kai-shek. Disgusted, weary and involved in hopeless politics, Chiang Kai-shek embarked on a gunboat for Shanghai, where without an army and uncertain of his position he arrived on March 25, 1927, practically a refugee from the Government which he had, by military force, established in Hankow.

The Nanking Government was, from its inception, anti-Communist. This Government was composed principally of individuals who had been eliminated from Nationalist affairs by the Russians and the Communists from 1924 to the departure of Chiang Kai-shek from Nanchang. Its principal leaders were Chiang Kai-shek, Chang Ching-kiang, Wu Tze-hui, Tsai Yuen-pei, Li Shih-tsen and Hu Han-min. The political experience of these men during recent years consisted in a constant personal conflict with Borodin. The Nanking Government came into existence as a direct protest against Borodin. Even before the organization of the Nanking Government, Chiang Kai-shek launched a campaign against the Chinese Communists in Shanghai, in the course of which several hundred men and women were killed. (April, 1927) Immediately after the organization of the Nanking Government, a Party Purification Movement was launched with the especial purpose of ferreting out and punishing Communists. Whenever possible, Communists or suspected Communists were arrested and shot. This movement eventually spread to the whole of Nationalist territory and is referred to by Communists as the "White Terror" which, from the standpoint of justice, decency and the welfare of the people, has been infinitely worse than the "Red Terror" of the Communists. In Hunan and Hupeh, boys and girls were shot for being in possession of a single suspected pamphlet. In Shanghai, Party Purification was soon identified with organized kidnapping, men of wealth and position being seized by the Nationalist officials and required to subscribe to Government bond issues before they were released. In fact, the Party Purification Movement in Shanghai proved so disreputable that it became one of the contributing causes of Chiang Kai-shek's resignation in August.

In connection with the Party Purification Movement, the *Kuomin News Agency* on July 5, 1927, issued the following summary of a conversation between Dr. C. C. Wu, Minister of Foreign Affairs of the Nationalist Government and Mr. Linde, the Soviet Consul in Shanghai.

Dr. Wu explained to the Soviet representative that the Chin Tang Movement—Purification of the Kuomintang—was necessitated by the fact that the Chinese Communist Party was hindering the progress and threatening the very existence of the Nationalist Revolution, so that the Nationalist Government was finally forced to take steps to suppress the Communists as were deemed necessary in order to ensure the success of the Kuomintang.

Dr. Wu further called the attention of Mr. Linde to the fact that as regards foreign relations the Nationalist Government realizes that Soviet Russia and China are placed in a similar position among the family of nations, both being under the oppression of Imperialism, and that there always exists the possibility of a Sin-Soviet entente.

Finally, Dr. Wu informed Mr. Linde that if the Soviet Government can understand that this anti-Communist Movement is not anti-Soviet Russia (which he will accordingly declare to this effect) the Nationalist Government will be more than willing to resume the traditional friendly relationship with the Soviet Government.

The semblance of friendly relations with Soviet Russia continued even after Borodin retired in August. Nevertheless, in Shanghai on July 16, the police of the Shanghai Municipal Council surrounded the Dalbank (Far Eastern Bank) producing a search warrant from the Provisional Court. The bank premises were searched on a warrant issued by General Yang Hu, Garrison Commander in Shanghai; but Mr. Quo Tai-chi, the Commissioner of Foreign Affairs, stated at the time that he had no knowledge that such an order has been issued, although the "due process of law," would have required his intervention in the matter. The specific purpose of the search of the Dalbank was to obtain information with regard to financial transactions between Soviet Russia and Chinese Communists and Kuomintang leaders. But it is now beyond doubt that an effort was also made to sequester funds of the Dalbank on deposit with the Chekiang Industrial Bank and the Shanghai branch of the Bank of China. When no evidence was found that the bank was a vehicle for the transfer of funds from Moscow to Chinese leaders, the Provisional Court dismissed the charges against the manager and permitted the bank to re-open.

At about the same time, six former military advisors of the Nationalist Army *en route* to Vladivostok from Hankow, were arrested and detained at Shanghai for several days. The treatment accorded them by General Yang Hu was the more surprising as these men had come to China as servants of the Nationalist Government and had performed the tasks assigned to them under the alliance between Soviet Russia and the Kuomintang. The men

*A semi-Communist is an opponent of the doctrines of Communism but who supports the tactics of the Communist politicians.

were chained at first but the chains were removed through the intervention of the Commissioner of Foreign Affairs, Mr. Quo Tai-chi, who eventually effected their release. There was never a civil or a military trial; these men were detained and released without any process of law. At the same time, Russian and German ships arriving in Shanghai from Hankow were searched in the hope of finding Borodin, whom rumor reported to have left Hankow.

III

Michael Borodin's rise from a mere advisor to the Kuomintang in 1924 to a political leadership tantamount to dictatorship in 1927 created a paradoxical political problem within the Nationalist Movement. Here was a foreigner, an alien, directing the people's movement for the abolition of foreign influence in China! Here was a movement which was impressing upon the world the whole-hearted nationalism of the Chinese people, controlled in its operations by a representative of the Third Internationale, a foreign organization! The younger, particularly the foreign-educated, members of the Kuomintang particularly resented Borodin's open pre-eminence, for whereas in Canton, he had been modest and retiring, in Hankow, he assumed a public rôle. He delivered fiery addresses in English to huge mass meetings; he maintained a large and efficiently organized office; he received callers as though he were a Minister of State; he gave interviews to foreign correspondents; he issued orders to subordinates. Many Chinese found in his activities a cause for national humiliation. The documents seized on April 6, 1927, in the Soviet Embassy in Peking by Marshal Chang Tso-lin's agents which were given the most widespread publicity, conclusively proved that the Russians were laboring entirely in their own interest and that the Kuomintang was being used as a mere pawn in the Third Internationale's efforts to achieve a world revolution. Furthermore, some of the textual comments of the Russian advisors with regard to Nationalist leaders caused irreparable personal grief and resentment. So far as these documents affected the inner workings of the Kuomintang, they proved that the Right Wing leaders had been driven from the Party by the Russians; that the Center (the Chiang Kai-shek faction) had been subjected to constant and destructive criticism by direct orders from Moscow; and that the Left Wing had been developed as a Russian agency to camouflage the activities of the Communists.

The Instructions on this subject may be quoted. At the 7th Plenary Session of the Executive Committee of the International Communist Party in Moscow, (1927) a series of resolutions were adopted which was received by the Russian agents in China in March, 1927. Article 16 of these resolutions states as follows:—

The Communist Party of China must strive to have the Kuomintang developed into a real People's Party, into a solid revolutionary block of the proletariat, the peasantry, the petty town-bourgeoisie and other oppressed elements which have entered into a decisive struggle against imperialism and its agents. To this end the Communist Party must act as follows:—

- (1) Systematically and persistently struggle against the right wing of the Kuomintang and the ideology of Tai Chi-tao* and their endeavor to change the Kuomintang into a bourgeois party;
- (2) give a proper form to the left wing and enter into close collaboration with it, but without trying to substitute in it the members of the Communist Party in the work of leadership;
- (3) persistently criticize the center which vacillates between the right and left wings, between the further development of the revolution and an agreement with imperialism.

Article 23 is also noteworthy in this connection:—The national revolutionary army is the greatest factor which brought about the victories over Sun Chuan-fang, and the extension of the territory over which the rule of the Nationalist Government extends. The national revolutionary army has played and can play in future its part only on condition that the revolutionary consciousness of the soldiers and their commanders is strong. It is therefore necessary that energetic political work should be not only done in the fundamental corps of the national revolutionary army, but that such work should also be organized among the politically uninstructed troops that have joined the national army, which can be done by means of traveling political workers. The Chinese Communist Party must display the greatest energy in order to intensify the political work in the army and to strengthen the left wing of the Kuomintang in the military nuclei.

The publication of these documents affected not only the relations between the Kuomintang and Soviet Russia, but also the personal attitude of the Right and Center Wings towards Borodin and towards the Left Wing. It became increasingly clear that peace between Hankow and Nanking and unity within the Kuomintang was altogether impossible as long as Borodin remained in China. Borodin and the Russians defended their position by means

of the Red Terror in Hunan and Hupeh, which strengthened their control over mass activities in Central China. But this very terror served to undo them, for the excesses of the Chinese Communists, particularly their violent attacks upon Chinese social customs, such as the institutions of the family and marriage, forced more conservative elements to concentrate their political efforts upon opposition to Communism. Thus, Chiang Kai-shek and his Nanking Government found little difficulty in selling well-secured bonds to the amount of \$30,000,000 at the very inception of his Nanking Government and funds were cheerfully given until August because it was assumed that Nanking was fighting Communism.

Although the Russians now insist that they never put any faith in Marshal Feng Yu-hsiang, the so-called Christian general, all contemporary evidence indicates that they had planned for Feng Yu-hsiang to combine with General Tang Seng-chi in a Communistic military effort against Nanking; they also supported Generals Chang Fa-kuei, Ho Lung and Yeh Ting in an effort to re-occupy Canton and to re-establish either at that city or at Swatow, a Communist base with direct access by sea to Vladivostok.

The failure of the general plan was unquestionably due to Marshal Feng Yu-hsiang's unwillingness to continue as a Communist tool. No attempt can be made here to analyze the psychology of Marshal Feng, but the fact must be stated that his religious and political changes of opinion are usually thrown upon the country with the suddenness of an earthquake and that often these changes completely alter the character of the Chinese political scene. He came out of Turkestan in the spring of 1927, presumably a Communist and a Russian tool; he also immediately entered upon an alliance with Nanking although he accepted 30,000 rifles from Hankow. The rôle he played during the next months was that of a middle-man between Nanking and Hankow, which almost resulted in his assumption of absolute leadership in the Kuomintang. This effort caused so much resentment among all factions of the Kuomintang that it might actually have served to strengthen Borodin, were it not that a document was found which forced even his adherents in the Kuomintang to turn on him.

The betrayal of Borodin and his final expulsion from Nationalist territory provides a dramatic denouement to his career in China. During the month of June, in casual conversations with Kuomintang leaders, particularly Mr. Sun Fo, the son of Dr. Sun and Mr. Wang Ching-wei, the nominal leader of the Hankow régime, Roy, a Hindu Communist, member of the Central Executive Committee of the Third Internationale, referred to new instructions sent to Borodin and himself by the Third Internationale. Borodin had made no mention of these new instructions, which was a breach of Article 6 of the agreement between the Kuomintang and the Communist Party which states:—

All instructions and plans to be given out to the Communist elements in the Kuomintang by the Communist Party of China or the Third Internationale should first be submitted to a Joint meeting and approved.

It was with considerable ingenuity that these Kuomintang leaders worked upon Roy to show them his copy without disclosing the fact to Borodin. It must be noted in this connection that Roy and Borodin were known not to be particular friends; that Roy had often criticized Borodin to the Kuomintang leaders and that he had expressed the opinion to them that Communistic activities among the Chinese peasants were detrimental not only to China but to the Revolution. Roy, as an Asiatic, even though a member of the Third Internationale, probably resented the supreme position of Europeans in a Chinese Nationalistic Movement. At any rate, he disclosed the new instructions which follow:—

1. Land in Hunan and Hupeh is to be confiscated by the peasants without any reference to the Government, the peasants acting through the Communist Party.
2. A new leadership is to be created within the Kuomintang consisting entirely of Communist Party members; the Left Wing of the Kuomintang is to be eliminated.
3. The Kuomintang organization is to be re-established along more radical lines, so that, in due course, the Kuomintang as a party disappears and the Communist Party of China takes its place.
4. A court is to be created consisting of persons with known reputations, which is to judge counter-revolutionary military men and is to punish them for their opposition to the revolutionary activities of the Communist Party.
5. Finally, an army is to be organized, drilled and armed. This army is to consist of 20,000 armed Communists and 50,000 laborers and peasants of Hunan and Hupeh.

*Son-in-law of Dr. Sun Yat-sen and a brilliant publicist.

The Kuomintang leaders in Hankow discovered that the command of the Communist troops to be organized under this scheme had been offered, secretly, to General Chen Chien and General Tang Seng-chi and had been declined by both. Mr. Sun Fo assumed the lead in the matter and discovered the civilians who were to be used to oust the old Kuomintang leaders and to create a new party. He and Mr. Wang Ching-wei then visited Marshal Feng Yu-hsiang at Chengchow and probably obtained his agreement to the expulsion of Borodin. During this period of investigation, the Hankow Kuomintang leaders managed to avoid Borodin. They met without sending for him; they did not visit his house; they never called on him. He sensed the frigidity of the Hankow atmosphere, for he left that city on at least two occasions, for no ostensible reasons. He grew anxious and nervous, which condition was augmented by a severe cold and by falling off a horse and hurting his wrist.

On July 13, a meeting took place at Mr. Wang Ching-wei's house at which it was determined to declare the Communist Party of China outlawed. The following day, a meeting was held in the Central Bank in Hankow, at which it was decided that Borodin and the Russian advisors should return to Russia; that all radical movements must cease and that a delegate be sent to Russia to explain the true character and purpose of the Kuomintang and the reasons underlying the expulsion of Borodin.

The Third Internationale replied by the following instructions:

"The revolutionary rôle of the Wuhan Government in Hankow is finished and at present it is controlled by a counter-revolutionary force."

The proclamation summoned Chinese Communists, first immediately to quit the Hankow Government and, second, to demand severe punishment for all participants in the repression of workmen and peasants.

Third, the Internationale asked Chinese Communists to retain their confidence in the Kuomintang and not withdraw despite the efforts of the Kuomintang to oust the Communists.

Fourth, Chinese Communists should spread the doctrine of the agrarian revolution and systematically arouse the workmen and peasants.

Fifth, the Communists should create illegal fighting apparatus within the Kuomintang party "on account of repressions and executions."

Borodin's personal reaction to the events of June and July were perhaps most emotionally stated in his interview with Aage Krarup Nielsen* when he said:—

"Thus, four years of fighting and sacrifice in behalf of the revolution have been nullified. History repeats itself again. It begins as a tragedy; the second time it is tragi-comedy. The revolution extends to the Yangtze. If a diver were sent down to the bottom of this yellow stream he would rise again with an armful of shattered hopes."

He left China, where he had been a dictator, a hated and feared man. He was required to travel overland, across Honan, Shensi and the steppes of Mongolia to Siberia, a hazardous and difficult journey because Chiang Kai-shek refused him a "*laissez passer*" through his territory. Chinese leaders wondered what would be Russia's revenge. Hankow collapsed and a peace with Nanking was effected. The Communists disappeared underground. Only Mrs. Sun Yat-sen and Mr. Eugene Chen of the Kuomintang leaders remained faithful to his friendship and they, too, went to Moscow.

IV

After the departure of Borodin, Nationalist officials were everywhere unduly hasty to prove their anti-Russian bias. In speeches, proclamations and deeds, the opposition to Soviet Russia and to Communism was emphasized in a manner which seemed to say: "Now that we are no longer affiliated with the Russians we are prepared to accept assistance similar to that given by them, from anyone else." The case of the Five Russians will here be cited as an example of this new orientation.

On September 30, 1927, five citizens of Soviet Russia were searched at Swatow on board a British vessel by order of the British consul at Swatow. These five Russians were Socal, Kumanine, Berg, Veger and Mrs. Veger. Of these five individuals only one, Socal, was of political importance: under the alias of Zilbert, he had been one of the principal military advisers of the Nationalist Government; he had served in this capacity with General Li Chung-jen, Tan Yen-kai, Ho Ying-chin, Wu Teh-chun—and principal Nationalist commanders. His explanation of his presence in Swatow is given in his petition to the High Court at Soochow, in which he said:

I was employed by the Nationalist Government as military adviser at the invitation of this Government and was at the end of September sent by General Galen to Swatow to find and give Kumanine (Zigon) some money and clothes to enable him to return to Russia. It was not possible to communicate with Mr. Kumanine, and my instructions were

to return with him to Russia when I found him as per copy of telegram from General Galen to General Pei Chung-hsi attached hereto.

Kumanine, who is also known as Zigon, stated as follows:—

I was employed by the Nationalist Government as military adviser and was adviser for some time to General Li Chung-jen. I was later assigned to General Ho Lung† and was sent to Nanchang to his army. During the summer all communications were cut off and as I have since been informed, General Ho Lung revolted. I speak no Chinese and was not informed of his intentions in this matter nor did he ask me for advice. Our communications were through an interpreter. While I was attached to General Ho Lung's unit, he took the army overland from Nanchang to South China and kept me under observations and detention during this time. I desired to go to Hankow but was not permitted to do so. When this unit arrived in South China, I finally succeeded in getting away from General Ho Lung and I then proceeded to Swatow, as I wished to get into communication with my family since I had not been able to communicate with them for some months as communications had been interrupted. In Swatow I met Socal who had been sent there by General Galen to give me clothes and money to enable me to return to Russia, and in this connection General Galen has sent a cablegram to General Pei Chung-hsi as per attached copy.

Now, the importance of Kumanine's statement is his attachment to General Ho Lung's army, for this body is definitely Communist and has consistently refused to obey orders issued by the Nationalist Government. In August, it commenced a march with the troops under General Yeh Ting from Kiukiang on the Yangtze to Swatow in Kwangtung overland through some of the most difficult country in China and still unbeaten (in March 1928) it is striving to establish a Communist base somewhere in Kwangtung or Kiangsi. Of the five persons held, only Kumanine can definitely be associated with continued Communist activities after Borodin retired from Hankow.

As for Berg and Mr. and Mrs. Veger, Berg arrived in China about a fortnight before he was arrested as an employee of the Soviet Mercantile Fleet. He came to China from Japan. Mr. Veger was employed by the Soviet Trade Commission and was stationed at Canton. At the moment of arrest he was *en route* from Canton to Shanghai. Mrs. Veger traveled with him in her capacity as his wife.

The telegram from General Galen to General Pei Chung-hsi‡ to which both Socal and Kumanine refer, follows:—

It has come to my notice, that military advisers Zilbert and Zigon were arrested by Shanghai military authorities.

I hope sincerely, that by the time you receive my telegrams this misunderstanding will have been cleared up and both of them already released. Considering, however, that you are overburdened by many most important engagements, I fear that there may occur some delay and therefore should like to draw your attention to the following short explanation with which most likely you are acquainted from the statements of the arrested.

Zigon was the only adviser, who owing to the sudden uprising in Kiangsi, was cut off and lost every possibility of communication with me. All my attempts to get in touch with him and assist him to return to U.S.S.R. as all his comrades were in a position to do, were unsuccessful. At that time I appealed to all the competent civil and military authorities at Hankow to assist me in this. While in Shanghai I proposed to Zilbert, who at that time was forced to stay in Shanghai till October 15 waiting for a steamer to Vladivostok, to leave for Swatow and attempt to find Zigon and assist him to leave immediately for U.S.S.R. Zilbert left for Swatow at the end of September. Seeing that no information was to hand, Zigon's wife left on October 3, in search of her husband, but she did not find him because he had already left Swatow with Zilbert. While on the return journey they were arrested and are held under arrest until the present moment.

I sincerely hope that you will not refuse to take urgently the necessary measures to release Zilbert and Zigon and that you will give them every facility to return home, which without doubt they have more than deserved.

Please accept my farewell greetings and sincere wishes to your success. Good news as to your health I hope to obtain personally from Zilbert and Zigon.

Yours, Galen.

General Galen, it will be remembered, was the chief Soviet military adviser in China and second in significance only to Borodin. Even after Borodin retired, he tarried for some weeks, to liquidate the Soviet connection with the Kuomintang. He is an Austrian and is believed to be a grandson of von Blucher, the great Field Marshal. Popular with Nationalist military men, he was given a *laissez passer* via Shanghai and remained in that city for three weeks as a guest of General Pei Chung-hsi. General Pei Chung-hsi in the leading figure among the Kwangsi militarists and although once

* "Berliner Tageblatt."

† Communist general.

‡ Commander of the Nationalist troops in Shanghai at the time.

Chiang Kai-shek's chief-of-staff, he is now his principal opponent and his probable successor as leader of the Nationalist army. He has been publicly anti-Borodin and anti-Russian since March, 1927.

To return to the five Russians; on September 30, they were searched at Swatow; on October 1, they were detained and searched at Amoy. At neither place was evidence discovered justifying arrest, but they were detained and watched at Amoy until October 8, when they were permitted to leave for Shanghai. On October 10, they arrived in Shanghai and were landed at a wharf in the French Concession. They were immediately arrested by the local French police without warrant from any court. (It is interesting to note that the French police denied that the Russians were in their possession at the time, although the Chinese authorities gave me all the facts as they were taking place.) They were detained by the French police for two days, after which they were handed over to the Chinese military authorities, without warrant or trial. They were then detained by the Chinese authorities at Lunghua for sixteen days without trial.

Meanwhile, the Soviet Consul-General had retained a firm of American lawyers in Shanghai to defend them. In the negotiations which took place, it was agreed that the prisoners would be handed over to the civil authorities and would be given a fair trial in the Shanghai District Court. On the very night that word was sent to the lawyers that the military authorities would be instructed to hand the prisoners over to the Court authorities, (October 22), they were sent to Nanking under guard and were imprisoned there until November 7. This action of the military surprised officials of the Ministries of Foreign Affairs and Justice who intervened and made it possible for the Russians to be returned to Shanghai on November 7 for trial. But it was here discovered that the Shanghai Court lacked jurisdiction to try them on the charge of conspiring to undermine the Government—the first time, incidentally, that they knew what they would be charged with. On November 9, therefore, they were taken to Soochow and imprisoned there to await trial. On December 3, the Procurator of the High Court at Soochow filed charges of treason against the five Russians—the first formal charges in two months.

On December 16, a preliminary examination was held before Judge Ling in the Soochow High Court. Socal and Berg were acquitted, but the other three were held for trial. The five prisoners were nevertheless detained without bail being allowed. Socal and Berg were told that they would be released in three days if the Procurator did not protest or appeal. The reasons for the acquittal were stated by Judge Ling Dah-wen to be as follows:—

With regard to Socal who went to Swatow, although just at the time of the arrival of the Communist army there, and when passing through Shanghai from Hankow was traveling secretly, for he changed his name to Pill, yet he stated that he was ordered by General Galen to go to Swatow in order to hasten the return of Kumanine to Russia. There is nothing to prove that he has any connections with the Communist army of Ho Lung. Furthermore, as soon as he gets to Swatow he immediately leaves for Amoy to come back to Shanghai. Therefore there is not sufficient evidence of suspicion that he committed or conspired to commit the offense of overthrowing the Government.

As to the accused Berg I find that his passport was issued in Vladivostok on the 30th day of August. In a letter dated September 1st from the Soviet Mercantile Fleet in Vladivostok to the Chinese Consul there a request is made for a visa for their engineer Mr. Berg to proceed to Shanghai on business. Also this passport was visaed by the Japanese Consul-General.....* and on the 11th of the same month it was inspected and stamped in Japan. This being so this accused started from Vladivostok after Ho Lung had entered Kwangtung from Kiangsi, and furthermore there is no evidence to prove that the money he had with him was to support the Communists, and it cannot be suspected that he has committed a crime.

The following day, the five Russians were handed copies of the Judge's decision, but it was not until December 19, that the Procurator received his copy and he insists that he has three days from date of receipt of the Judge's decision to protest. Meanwhile, Socal and Berg daily requested that they be released in accordance with the judgment. At 6 p.m. on December 22, the Procurator filed his protest against the release, but no copy was given to Socal, Berg or their lawyers. The Procurator's protest was filed six days from date, which is clearly against the law. Nothing more was done in the case until late in the following February, when the five prisoners were taken to Nanking to be tried before a Counter-Revolutionary Tribunal especially created to try such cases. During one period of their detention, Socal and Berg went on a hunger strike as a protest against their continued imprisonment after a Judge had acquitted them.†

This case is particularly interesting because it involves all the elements of procedure in a Chinese court and because of the services which Socal, as Zilbert, had rendered the Nationalist Government. It has been clear since their arrest that these Russians are detained without due process of law, because no official is willing to be stigmatized as pro-Russian. The few officials, who have attempted to assist the Russians, have done so surreptitiously, always insisting upon secrecy lest they be accused of still maintaining relations with Soviet Russia. There could not be a fuller swing of the pendulum!

During November and December, 1927, events occurred in Canton, which definitely and perhaps permanently ended the alliance between the Kuomintang and Soviet Russia. A Communist *coup d'état* was attempted. Communist soldiers and laborers, led by Russians, seized the city, arrested officials and gave themselves over to the systematic looting of the place. The Canton Bund, pride of the modern spirit of the South, was burned by incendiary fires and by gun-shot. Thousands of human beings lost their lives. The troops sent to put down the Communists were equally ferocious, so that Canton suffered both a Red and White terror in the course of a few days. The Communists managed to seize the silver reserves of the Central Bank, amounting to \$ 2,500,000, Cantonese currency, thereby further depreciating the Central Bank notes and paralyzing trade. Simultaneously with these events came the astonishing information that Eugene Chen was actually *en route* to Canton from Moscow; that 50,000 rifles and 300 Russian officers were being sent to Canton; that Teng Yen-da, Tam Ping-shan, Kao Yu-han and Yang Bao-an, outstanding and ferocious Communist leaders, were actually in Canton.

The immediate reactions to the Canton *coup d'état* was the formal severance of relations between the Nationalist Government and Soviet Russia and the appearance of a marked and universal tendency toward reactionary political methods within the Kuomintang. There can be no question but that the political activities of Mr. Wang Ching-wei made the Canton Communist effort possible; therefore Mr. Wang and his followers were forced not only to retire from political activity but also from China. They are now assembling in Europe, where they will probably confer with Chinese Communists from Moscow on future efforts.

Russian consuls and officials were required to leave Nationalist territory. The official order promulgated by the Nationalist Government and issued by Dr. C. C. Wu, Minister of Foreign Affairs, dated December 14, 1927, reads as follows:—

The Nationalist Government has for some time been informed by various reports that the Soviet Consulate and the Soviet State Commercial Agencies in areas within the jurisdiction of the Nationalist Government have been used as headquarters of red propaganda and asylum for communists. An exposure of these facts has been so far withheld by the Government in view of the international relations existing between China and Russia.

On the 11th of the present month a rising took place in the city of Canton culminating in the forcible occupation of the city by the Communists who cut off all communications and burnt, plundered and massacred throughout the city. This startling event with all its disastrous consequences is mainly attributed to the fact that the Communists have availed themselves of the Soviet Consulate and the Soviet State Commercial Agencies as a base to direct their operations. And the fear is entertained that occurrences of like nature may take place elsewhere.

With a view to maintaining peace and order and to preventing the further spreading of such disasters, the Government feels that such a state of things, fraught with incalculable dangers to the Party and State, can no longer be tolerated. Therefore it is hereby ordered that the recognition accorded to the Consuls of the Union of Soviet Socialist Republics stationed in the various provinces shall suspend their functions, in order that the root of evil influence may be eradicated and a thorough inquiry instituted. The Minister of Foreign Affairs is instructed to superintend its subordinate organs and to act in conjunction with the other government authorities concerned to put into execution this Mandate with all due care and to report thereon.

The Provisional Court in Shanghai on December 17, issued a restraining order, closing Soviet Russian enterprises in Shanghai, which, after citing the above mandate, states:—

The Commissioner for Foreign Affairs for Kiangsu further states that he has been instructed by the Ministry of Foreign Affairs to hand a copy of the above order to the Consul for U.S.S.R. at Shanghai. The

*The Japanese names in Chinese characters are not given clearly in my translation and are therefore omitted.

†The Russians were eventually tried by the Counter-Revolutionary Tribunal in Nanking and were acquitted.

Commissioner states that on the same day he received further instructions from the Ministry of Foreign Affairs ordering him to take steps to suspend the business of all U.S.S.R. State Commercial Agencies, such as banks, steamship companies, etc. and to detail policemen to picket these agencies. The Commissioner adds that in consequence of the foregoing instructions he has notified the Consul for U.S.S.R. and has prepared a passport requesting the said Consul to leave China. He has also written to the Senior Consul informing him to the above effect. The Commissioner, asks me to make inquiries into all U.S.S.R. State Commercial Agencies and to order these agencies to suspend business and to detail policemen to picket them. I have now discovered that the Soviet Mercantile Fleet, 1 Whangpoo Road, the Dalbank, 29A Szechuen Road, and the Centrosojus, 2nd Floor, 2 Peking Road are U.S.S.R. State Commercial Agencies and accordingly request you (Municipal Police) to detail policemen to these agencies and order them to suspend business, and to report to me after you have executed this order.

The Russian Consular and other governmental officials left Shanghai within ten days after the issuance of this order. Consular business was taken over by the German Consulate in Shanghai and other cities in Nationalist territory. In Canton and Hankow, the expulsion of the Russians was drastic; in Shanghai an effort was made by the Commissioner of Foreign Affairs, Mr. Quo Tai-chi, to find a formula for expelling the Russians in such a manner that justice and humanity might be served without compromising with the Communists. A proclamation was issued by Mr. Quo in which he arranged for such Soviet citizens to remain in his territory after due investigation indicated that they were there for commercial and not political purposes. His order stated:—

In accordance with Article 4 of the order of the Ministry of Foreign Affairs withdrawing the Nationalist Government's recognition of Soviet Russia and suspending the functioning of all Soviet Commercial Agencies, all Soviet subjects are hereby ordered to present and register themselves at this office beginning from to-day, December 16 till December 23. Those Soviet subjects who intend to return to their country are also hereby ordered to apply for passports within the above-stated period so as to be sure of a safe departure from China. All violations of this order shall be fined according to law,

Moreover, all self-declared "White" Russians who have not yet registered themselves as such at this office, are ordered to do so at the same time. Failure on their part will automatically nullify their declared status and they shall be classified as Soviet subjects.

A special committee was appointed to supervise the liquidation of the Russian firms, but the Committee in time was constituted as a committee to supervise such Soviet organizations, as might be permitted to remain. At the first meeting of this Committee which consisted of representatives of the Ministries of Foreign Affairs, Finance and Communication, the following decisions were reached: (December 21, 1927).

1. That the committee will supervise over the liquidation of the following organizations, their function having already been suspended. (a) The Dalbank; (b) the Soviet Mercantile Fleet Agency; (c) The Soviet Trade Mission; (d) The Transport Office of the Ussuri Railway; (e) U.S.S.R. Insurance Corporation.

2. That the following organizations shall be allowed to carry on their respective business under the supervision of the committee. (a) Centrosojus, (b) The Chinese Eastern Railway Commercial Agency at Shanghai.

In accordance with the above decisions, the Centrosojus, which is a British corporation organized by Soviet citizens for commerce in tea was permitted to continue to do business in Nationalist territory under the general supervision of the Ministry of Finance, whose major interest in the matter was to ascertain that funds received, transferred and expended were used in the tea trade and not in politics; that the Soviet Government and the Third International did not transfer funds to China *via* the Centrosojus. The business of this Company proceeded without much difficulty under the supervision of the Committee.

The Shanghai agency of the Chinese Eastern Railway presented a curious anomaly, for this is a Chinese Government railway in which China and Soviet Russia are partners. If the Nationalists recognized the Shanghai agency as a Soviet enterprise, it might set the precedent for a claim that the railroad is Russian, which would embarrass Nationalist diplomacy in the event of the occupation of Peking and North China by their forces. This difficulty was overcome in the course of a few weeks and business continued under supervision.

The Dalbank, however, proved a stumbling block, for there was a belief that this bank was used for the transfer of political funds

from Moscow. Although the bank had been investigated thoroughly on a previous occasion and nothing was found to implicate it in Communistic activities the Liquidation Committee entered upon a very thorough investigation, appointing an American firm of chartered accountants, Messrs. Haskins and Sells, to do the job. They found nothing in the accounts to warrant the assumption of political activity on the part of the bank. Nevertheless, the Government was unwilling to issue an opening order for some time to come. On January 12, 1928, the bank petitioned the Nationalist Government to authorize its re-opening under supervision similar to that employed in connection with the Centrosojus. The petition is too lengthy to be quoted in full but paragraphs of it are of historical value:

"We would first submit for your kind consideration the fact that the Dalbank is a Chinese incorporated company, registered in Peking and with its head office in Harbin. It maintains several branches in China, but has no branches whatever in the U.S.S.R. It is engaged solely in Commercial banking and as indicated above, by far the greater part of its business has been in financing shipments of tea from Shanghai to the U.S.S.R."

"We are sure that you do not intend to discriminate between commercial enterprises of the same class. The results of the investigations of your Committee have apparently satisfied you that certain commercial enterprises here which are wholly or partly under the control of Soviet citizens should be allowed to carry on if their business is purely commercial, and you are satisfied further that they are not engaged in political activities. You have dealt in this manner with the Centrosojus and the Chinese Eastern Railway, and have reconsidered your first orders as to the closure and liquidation of the offices of these companies and by subsequent orders have permitted them to continue in business. We would most respectfully submit that the organization of our bank and its activities here have been of such a character that you should favorably consider our application to be dealt with in the same way as you have dealt with the Centrosojus and the Chinese Eastern Railway.

The Centrosojus is a British incorporated company, an outgrowth of a Russian co-operative society. Its business here is purely commercial, being almost entirely the export of tea from China to the U.S.S.R. The Chinese Eastern Railway is a joint Chinese and Russian enterprise and its agency here is solely for the purpose of booking freight and passage for the railway in Manchuria and connecting roads, and for the purpose of purchasing supplies required by the Railway. Our bank is a Chinese incorporated company engaged in commercial banking here and is a purely commercial enterprise. Owing to the fact that its organization is founded in a charter issued by the Government of China, that its control and its operations are centered in China, and that its activities are purely commercial, it should certainly stand in as good a position for your favorable consideration as the Centrosojus and the Chinese Eastern Railway Agency.

During February, after lengthy negotiations and a change of Government, the Dalbank was permitted to reopen under supervision by the Ministry of Finance.

Only one other case need be quoted: the effort of the Hankow Government to force the Centrosojus in Hankow to pay a military levy of Taels 1,000,000 for the privilege of continuing business in Hankow. The first communication with regard to this was dated January 18, 1927, and was addressed to the Asiatic Trading Corporation, a British firm in Hankow, which acted for the Centrosojus. The letter follows:—

I am instructed to inform you that owing to the necessity for payment of the large number of troops requisite to maintain peace of this center the authorities find themselves obliged to impose a "special Military Levy" on the different businesses of the Port capable of bearing such. Principal among these is that of tea.

On making comparison with duties imposed on this commodity in European countries with these levied in China, we find that the latter are far below that of other countries. In these circumstances you will appreciate the fact that in order to avoid hardship, the authorities have decided as and from to-day to impose a "Special Military Levy" on all tea exported from this center whether in form of brick, leaf or dust.

The Asiatic Trading Corporation which you represent being the largest holders of stocks at present in the Port, we are writing you specifically to assure you that this levy is purely a temporary measure, and effects only these stocks at present in your godowns, and such additional stocks as are already contract for and *en route*. The object of the authorities is to obtain sufficient funds to pay the troops during the New Year, and assuming your willingness to assist by the payment of a lump sum in advance, the amount of ten tael cents (Tls. 0.10) per lb. which it is proposed to levy, may be commuted on terms which we will endeavor to make as easy as is compatible with the object of the authorities.

Should you have any observations to make, it will greatly facilitate matters if you will communicate direct with our Advisor on Foreign Affairs, Mr. Archibald Grant.*

*A British journalist to Hankow.

In a letter to the Hankow Tea Guild, the Centrosojus stated its case fully :

On the 18th of this month a letter was received from the Wuhan Garrison Headquarters, signed by the Chief of Staff of the Garrison Headquarters Command, informing that the authorities find themselves obliged to impose a "Special Military Levy" on tea at the rate of one mace (Tls. 0.10) per 1 lb. which is equal to Tls. 13.33 for one picul. This letter was addressed by mistake to the Asiatic Trading Corporation and they replied to the authorities to-day that all tea is owned by the Centrosojus and therefore the authorities have to apply to us.

Previous to the receipt of the letter we had intercourses with the Commissioner for Foreign Affairs of Hupeh, Kan Chia-hou, on the subject of future business of the Centrosojus at Hankow. It is difficult to report fully on this intercourse, because we had conversation with the Commissioner not fewer than five times. But we will state here correctly the essence and main points of the matter.

After the recent breach of diplomatic relations between the Nationalist Government and the Government of the U.S.S.R. the Commissioner invited the Manager of the Centrosojus at Hankow for a conversation, during which he stated that notwithstanding the fact that the Centrosojus here is a Soviet Trade Establishment and as such must be closed, the local Government realizes the importance of the Centrosojus in the economic life of this district and will devise a way how the Centrosojus may exist at Hankow in future. In reply we said that the breach of diplomatic relations between the two countries does not mean the breach of trade relations and because the trade is mutually advantageous we must do all to continue it. Furthermore, we stated, the Centrosojus in the U.S.S.R. is not a state trade establishment and the Centrosojus at Hankow, as well as in Shanghai, is the branch of the Company established in London and is here under British jurisdiction.

In accordance with the Commissioner's request we presented to him a written statement regarding the activities of the Centrosojus in Hankow and Shanghai, informing him that during the season we bought tea in China markets for Tls. 9,800,000 and other goods for Tls. 1,200,000 and in addition we spent about Tls. 2,600,000 on manufacture of brick tea, transportation and storage of tea, etc. ; thus the total amount we spend for China produce in the Yangtze Valley is Tls. 13,600,000. This amount does not include Tls. 5,000,000 which our Shanghai office has to pay for foreign tea dust (India, Ceylon, Java) shipped to Hankow for manufacture of brick tea.

After presentation of the statement we were invited again and the Commissioner said that Centrosojus will be allowed to exist at Hankow if it will pay to the Government 10 per cent. tax on the total turnover, or on Tls. 10,000,000 turnover (we have about that in the Yangtze Valley) we had to pay Tls. 1,000,000. We replied that we can only pay the taxes instituted before, if such taxes must be paid, but cannot pay anything above and especially such a huge amount, the imposition of which will force the Centrosojus to close its business here, and the closing of the office that bought over 70 per cent. value of Hankow Tea Market means killing to tea trade, which is a very good source of revenue. During the next conversation the Commissioner said that the tax will be lowered to 5 per cent. or Tls. 500,000, and that if we do not agree to pay this amount the Centrosojus at Hankow will be closed, because the Government suspects us in carrying on communist propaganda. We then replied that we cannot pay the tax and as regards the propaganda it will be very simple for the Government to convince itself that we do not engage ourselves in propaganda activities. Still another conversation took place during which the Commissioner said that the Government is in great need of money now and it will be very good for us to give support of Tls. 200,000 as a loan or advance against any security ; he said that if we do not give the support then we take the risk as the Authorities are antagonistic towards the Centrosojus and can stop the business not only by closing the Office but also by expelling the employees of the Centrosojus (including the Manager) from here, in which case the Centrosojus cannot continue business at all.

During the last conversation on the 17th of this month we said to the Commissioner that to consider his request for a loan to the Government of Tls. 200,000 we must have an official letter from the Commissioner. The Commissioner replied that about that matter he did not all the time speak to us officially as the Commissioner, but in his individual capacity simply transmitted to us the request of the Authorities. In view of this we do not know what the Commissioner told us during the intercourse with him officially and what he told informally or in his individual capacity.

To close our information regarding the intercourse with the Commissioner we may mention here that to-day we sent a letter to him, stating that pending the clearing of the question whether any tax or taxes are due from us on the foreign tea dust, which we manufacture here into brick tea after mixing with China tea dust, we intend to pay Tls. 30,000 before the Chinese New Year (because we realize the present need) on the understanding that all matter about taxes on foreign tea dust will be settled after the New Year. Now we do not know whether the Commissioner had read that letter, because we have the letter back, though the envelope is opened.

In conclusion we have to state that any taxation on such Chinese export article as tea, which has to compete with many other teas (India, Ceylon, Java, Japan) will be very harmful to the tea trade of China. The Chinese Government before the Nationalist Revolution and the present Nationalist Government have realized this very important point and therefore have declared that no taxes must be levied on tea.

After a month of negotiations, during which several members the staff of the Centrosojus were detained by the military authorities and their factories in Hankow closed, the company was forced

to pay, it is stated, Taels 200,000. They were then permitted to continue to do business. This case was very complicated because the stocks often held by the Centrosojus and which the military had threatened to seize had been financed by American and Belgian banks and had been insured by an American company, while both the Centrosojus and the Asiatic Trading Company were legally British concerns.

VI

The ousting of the Russians from Nationalist territory was essentially an internal Kuomintang problem. No principles were involved. No quarrel with Soviet ideology underlay the asserted opposition to Soviet Russia. The Kuomintang had become broken into factions, some of which had the support of Soviet Russia which might have assisted them in driving from power those factions to which Soviet Russia was antagonistic. During November, the Center Party, headed by General Chiang Kai-shek, which is now in control at Nanking, was favorably disposed towards the pro-Soviet party and threw the full force of its influence behind Mr. Wang Ching-wei, its chief political protagonist. After the Canton *coup d'etat*, The Center turned about, dispensed with Wang Ching-wei and entered upon a violent and bitter anti-Soviet policy, which was the logical thing to do, as otherwise their position would have been untenable in the Shanghai area. It hoped by this new orientation to win the support of Japan and Great Britain, as it could no longer expect support from Soviet Russia. But the reaction led futher than the Center had anticipated. It was left altogether alone, large elements in the Kuomintang deserting it for reasons not associated with diplomacy. It thus was forced to seek for talent outside the Kuomintang. Turning to the Mandarinate, it found officials who were neither of the Kuomintang nor of the Peking Government, but who were willing to take posts under either. The Kuomintang which had been a disciplined party, recognizing in no instances the right of outsiders to hold public office, now became diluted by Mandarism, while former members who had been anti-Soviet were driven leftward by the excessive reactionary tendency of the center. This is the state of politics at the moment.

Japanese Commercial and Industrial Interests in China

JAPANESE interests in China amount to approximately Y.1,800,000,000. In the Yangtze Valley alone, commercial and industrial interests approximate Y.270,000,000.

The Sino-Japanese Business Association gives the following summary of Japanese financial interests in China as follows :

(a) Japan's investment at Shanghai, Hankow, Tientsin, and Tsingtao,			
Cotton Spinning Industry	...	...	Y.230,000,000
Other industries	...	...	110,000,000
Marine Transportation	...	...	57,000,000
Fixed properties	...	...	100,000,000
(b) Ditto, elsewhere	...	...	25,000,000
			Y.522,000,000
(c) Japan's investment in Manchuria,			
Transportation (railways, etc.)	...	...	330,000,000
Commercial Undertakings	...	...	15,000,000
Manufacturing enterprises	...	...	74,000,000
Agricultural enterprises	...	...	19,000,000
Mining enterprises	...	...	8,000,000
Marine product enterprises	...	...	15,000,000
Divers enterprises through banking facilities	...	...	626,000,000
Fixed properties	...	...	150,000,000
			Y.1,237,000,000

These figures reach a total of Y.1,759,000,000. In addition to these the Japanese Government has made loans to the Peking Government and to provincial governments aggregating Y.700,000,000.

Chinese Colonization in Manchuria

Part II.—Settlement Zones and Economic Effects

(Continued from June).

By C. Walter Young

Aside from the question of the actual totals of Chinese immigrants who during the past few years have migrated to Manchuria no subject seems to have given rise to more diversity of opinion regarding this movement than that of the localities to which these colonists have gone. To what zones of settlement, for example, did the million immigrants who entered Manchuria in 1927 proceed, and what factors determined their course? Naturally confusion has arisen out of the extreme difficulty of obtaining accurate data at the points of dispersion which usually are the stations on one or the other of the railways from which these settlers have spread in living fans, often fans opened to form complete circles of settlement. Moreover, what might be termed the *economic magnetism* of each of these areas of colonization is of much importance alike to the settlers, the railways in Manchuria and the scientific organizations in China and abroad who recently have begun to study settlement in Manchuria. The million Chinese immigrants who came in 1927 and the possible two million or more who will have come in 1928 will mean much to the future development of Manchuria.

Essential to appraisal of these effects are the economic characteristics of the areas of settlement in Manchuria which, in the interest of clarity, have been delimited into specific zones, nine in number, and in each of which something of the history of settlement is considered.

Distribution of Immigrants in North and South Manchuria

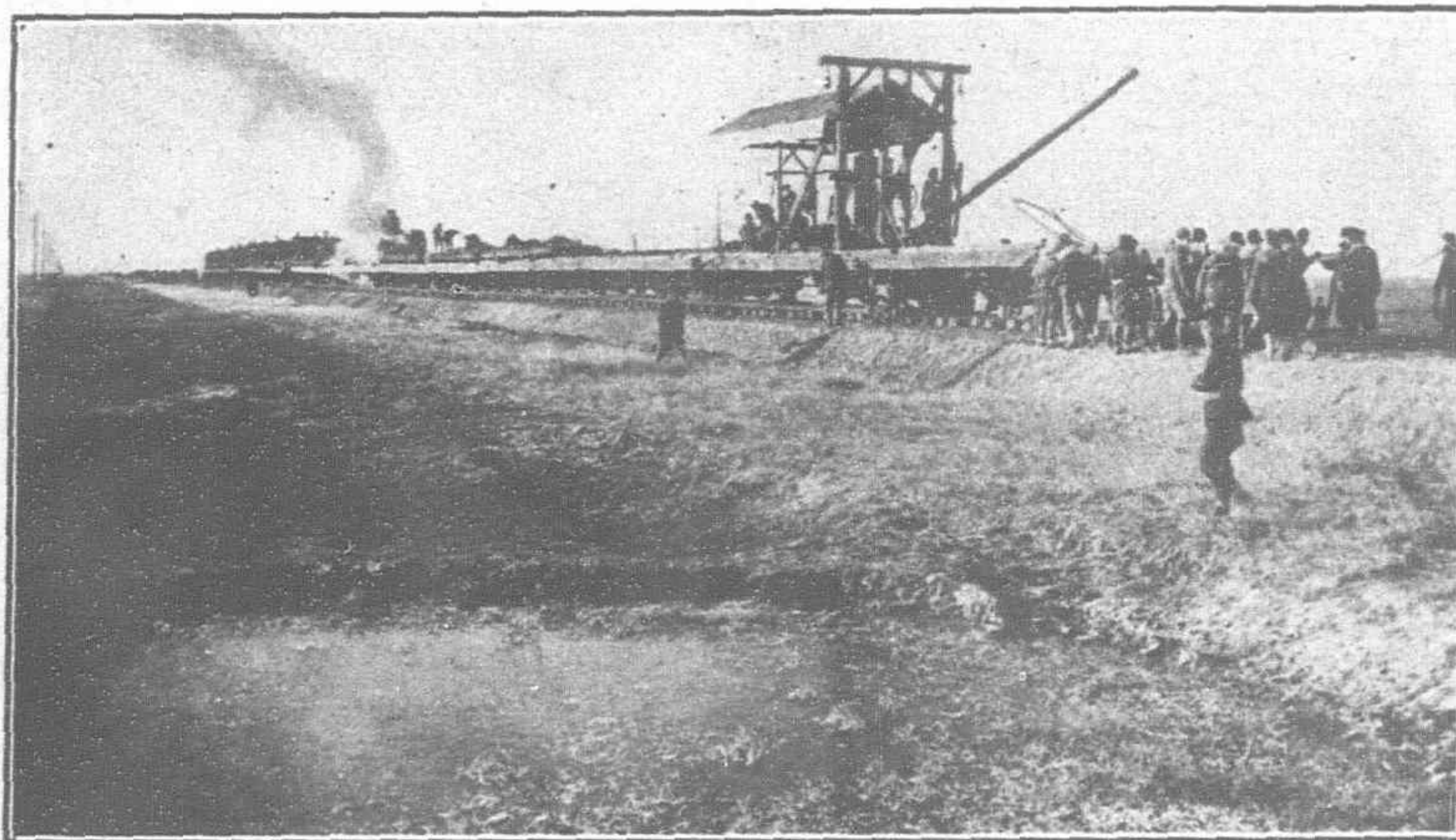
It is generally agreed that the majority of the Chinese immigrants who enter Manchuria proceed to "North Manchuria," the exact percentage of the total varying with the inclusiveness of the term "North Manchuria." If by that term we mean to in-

clude that territory which lies generally north of Changchun, the junction point of the South Manchuria Railway and the southern branch of the Chinese Eastern Railway, and which comprises the whole of Heilungkiang province as well as that part of Kirin served by the eastern section of the Chinese Eastern between Harbin and Pogranitchnaya, then over *two-thirds* of all the immigrants who entered Manchuria in 1927 proceeded to North Manchuria. Moreover, although the division of Manchuria into a *North* and a *South*, though referred to generally in certain treaties, has no definite

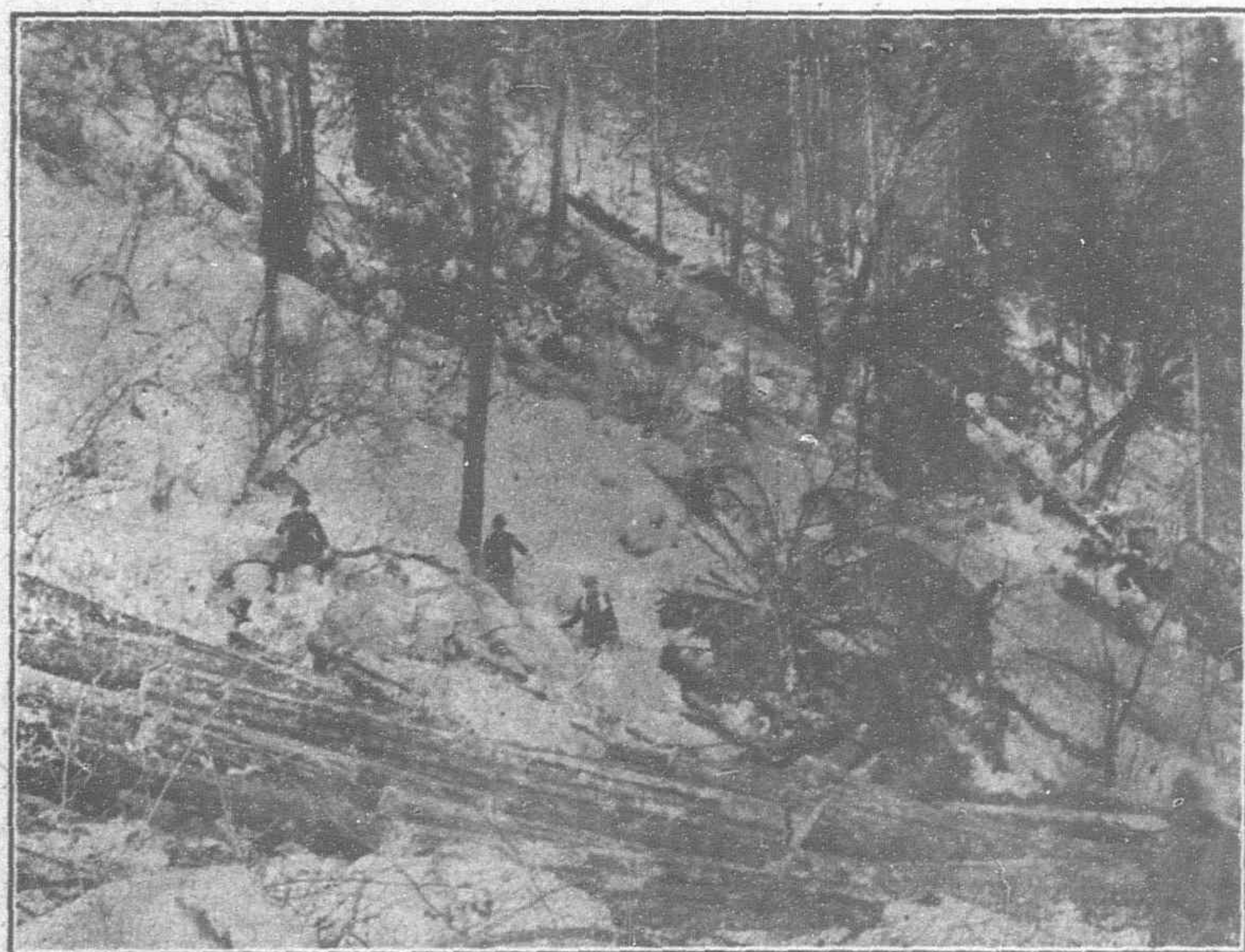
political status, and far less an international legal status, for the purposes of the study of immigration and settlement Changchun is a convenient division point and all territories served by the Chinese Eastern Railway may well be considered as parts of North Manchuria. Progressive settlement of North Manchuria as well as the trend of political events not necessarily related thereto may in the not far distant future efface the present significance of this division and make Harbin, rather than Changchun, a city which will mark the division of the north and the south. The importance of accurately denoting "North" and

"South" Manchuria is evident in the fact that in arriving at the conclusions that 53 per cent. of the immigrants proceeded to "North Manchuria in 1927," the Research Office of the South Manchuria Railway excluded the area from Changchun north to Harbin from "North Manchuria."

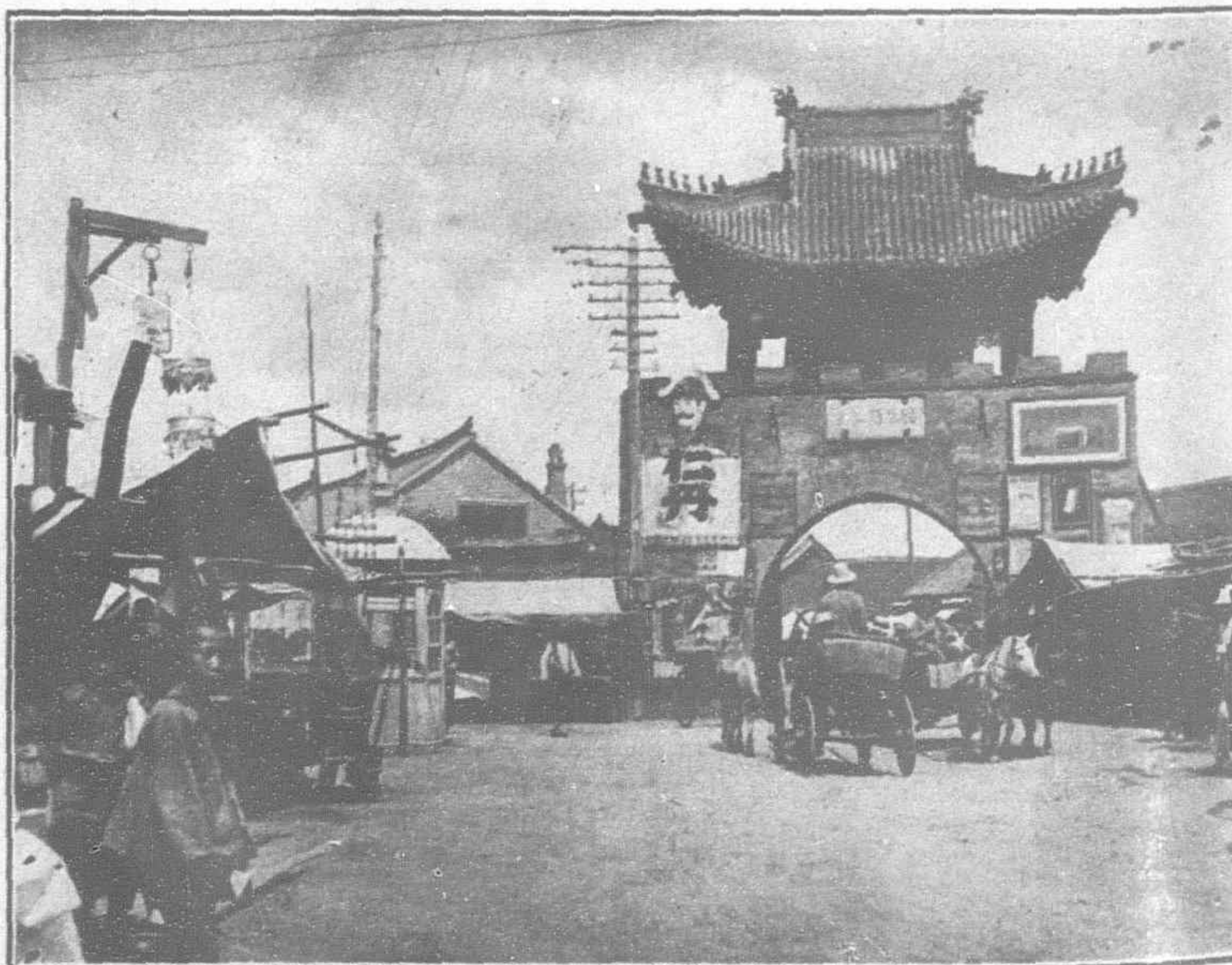
Relative Importance of North and South Manchuria.—Out of an estimated total of 630,000 immigrants who entered Manchuria during the first six months of 1927, approximately 430,000 continued into North Manchuria, or 68 per cent. North Manchuria is far more important as a potential settlement area than South Manchuria, and though in the past its settlement has been hindered by a combination of factors, principally its distance from Shantung



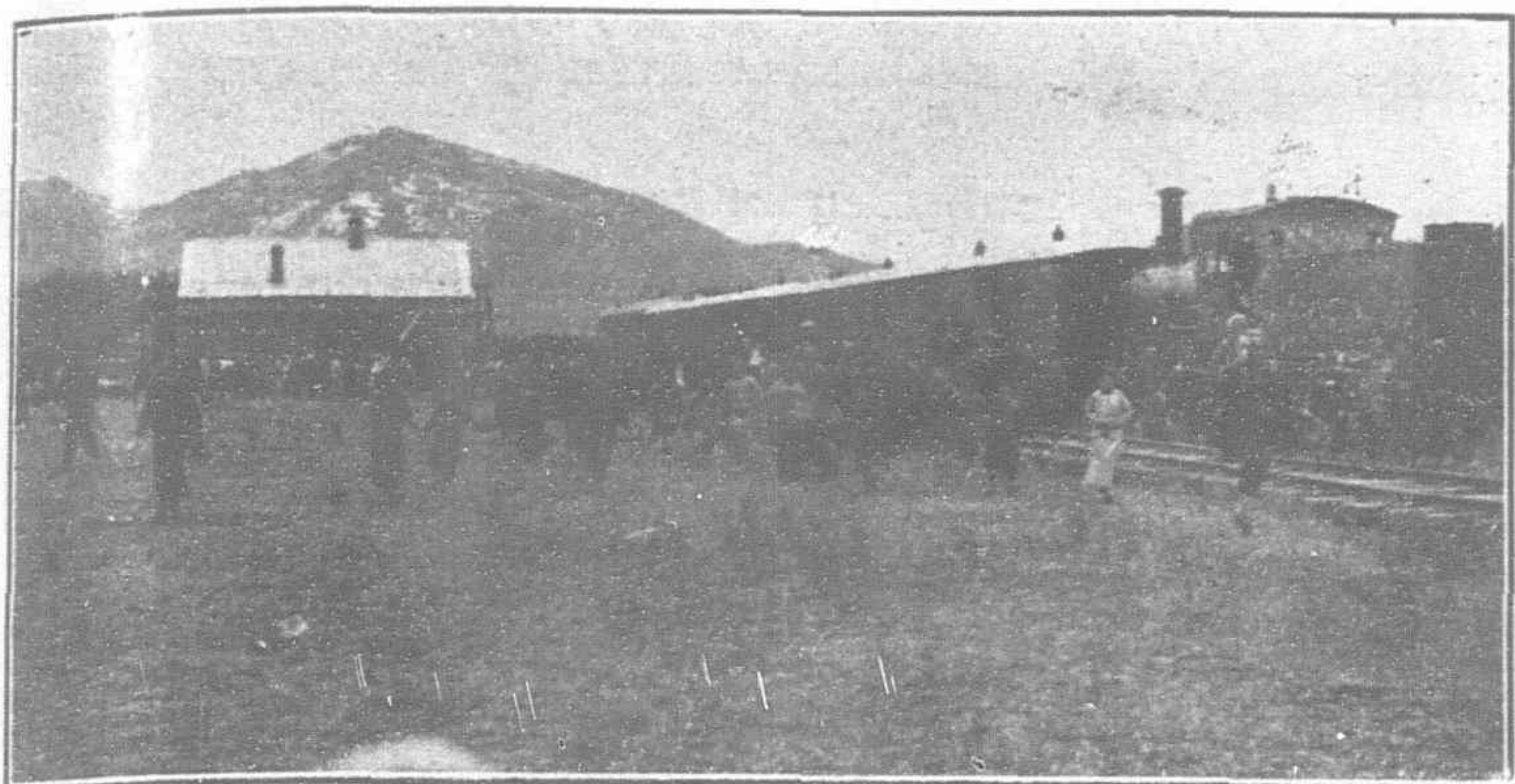
Track Laying on the South Manchuria Railway



Scene of a Wood-Cutting Place Near the Upper Stream of the Yalu River



City Gate of Kirin, Manchuria



Arriving at the 9th Station: Kirin-Changchun Railway

and difficulty of access due to inadequate communication, it has now assumed the place, predicted twenty years ago, of first importance in its attraction for settlers. By and large North Manchuria has greater agricultural potentiality, the density of its population is still far below that of Fengtien province, its cultivable area is much larger and judged by present production that portion of North Manchuria which is served by the Chinese Eastern Railway already is the principal cereal producing region of the whole of Manchuria.

In South Manchuria, on the other hand, while its railway communications are superior, there is less of natural soil fertility, especially poor being much of the Liaotung peninsula not in the immediate vicinity of the Liao river, and though there are very fertile areas in Kirin province which now are being rapidly taken up by the new settlers, this region is rather of greater present than future importance when compared with North Manchuria. Moreover, there are parts of Fengtien province in which the density of population is already such as to make further absorption of immigrants impossible. In fact, from such places as the Liaoyang district, south of Mukden, there is a constant movement of Chinese to broader fields and more fertile in that less developed country north of Changchun.

Settlement Zones in Manchuria.—Manchuria as a whole, treated as one great pioneer belt, for purposes of convenient study may be divided into no less than nine separate settlement zones. Obviously no rigid lines of demarkation can be drawn to separate these nine zones for they are not uniform in size or shape and they tend often to fuse one in the other. Some, to be sure, are quite distinct, such as that of the Yalu river area. Yet they all remain in a manner distinct, each having its own characteristics of settlement principal among which are (1) the means of access by rail or water, (2) the economic geography of the area, (3) population characteristics, (4) and the stage of development and relation to markets, which make this classification by no means as arbitrary as at first might appear to be the case. These zones, nine in number, have been determined principally by two factors, the means of access and the economic magnetism of each zone. For convenience they will be referred to by the titles given them in this classification, which gives in addition the approximate distribution of immigrants in each of them for the first half of 1927: *

SETTLEMENT ZONES IN MANCHURIA (SHOWING DISTRIBUTION OF IMMIGRANTS IN 1927).

SOUTH MANCHURIA (32%).

I. The Yalu River Zone	25,000
II. Upper Sungari River Zone	100,000
Miscellaneous (spreading from the above and along other railways, such as, the Peking-Mukden, South Manchuria, Ssuningkai-Taonan, etc.)	75,000
Total	200,000

NORTH MANCHURIA (68%).

III. The Taonan Zone	15,000
IV. Upper Nonni River Zone	35,000
V. Changchun Northern Zone	35,000
VI. Western Zone of the Chinese Eastern Railway ..	60,000
VII. Eastern Zone of the Chinese Eastern Railway ..	125,000
VIII. Hulan River Zone	10,000
IX. Lower Sungari River Zone	150,000
Total	430,000

I.—The Yalu River Zone

Of the two settlement zones in South Manchuria which are of present importance that of the Yalu river was the first to be settled by Chinese in modern times. A distinct characteristic of this region is that it still presents the fact of a very large return migration each autumn and winter to Shantung. Many of the immigrants still might the better be classified as seasonal laborers.

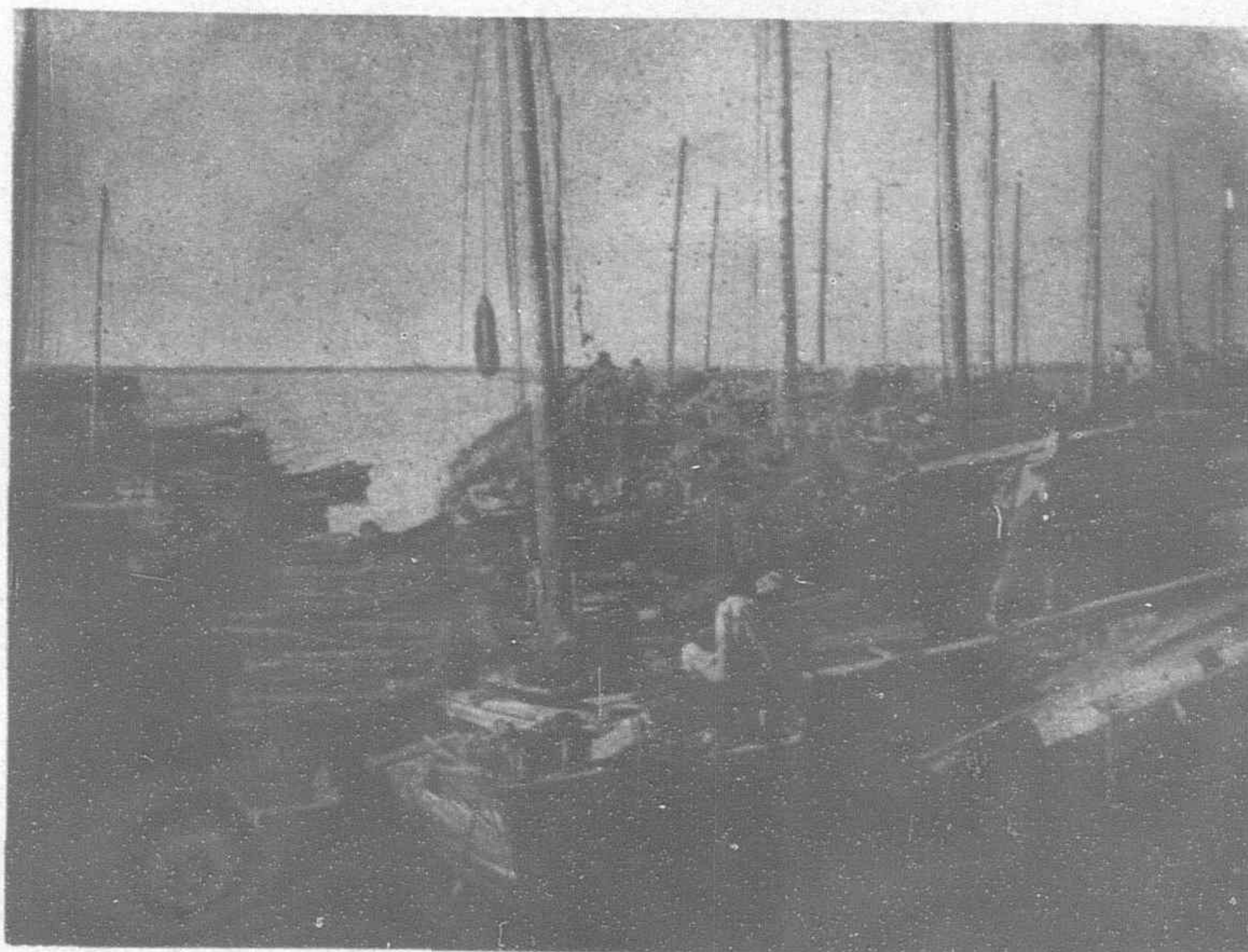
Of ready access by junks from Shantung it has grown in importance from its early character of illicit search for ginseng, the herb so highly valued even to the present in Chinese indigenous medicine, of discovery of gold in the upper reaches of the river, of agricultural settlement about Antung, near the mouth of the Yalu, with the interesting history of production of *tussah silk*, first in filatures in Shantung to which the wild silk-worm cocoons were sent, and then in filatures in Antung with Chinese operatives from Shantung, until to-day the principal cause of the immigration may be found in the timber reserves in the headwater areas of the Yalu and of the Hun river. Manchuria is the most important forest area of China, and the Yalu zone, though by no means the greatest, is yet one of significance which has for its principal appeal for the immigrants to-day the necessity for raftsmen on the river to pilot lumber rafts, these picturesque floating palaces of China, down the river in their excursions of two months from the Long White Mountains to the sea.

In the Yalu zone, characteristic of Manchuria until three years ago, immigration from Shantung was principally seasonal, employment in rafting and timber felling, naturally being seasonal occupations. With the breaking of the ice on the river in early spring the tide of immigration began from Shantung about the first of April, varying with the season. Conditions in Shantung, however, have operated to alter this regularity, as in 1911 when one of the Shantung famines drove tens of thousands of Chinese out of the inundated areas to the Yalu zone, thousands arriving in mid-winter.†

The Yalu Timber Company, a joint Sino-Japanese enterprise founded in 1908 with a capital of \$3,000,000, has the exclusive lumbering rights on the right bank, the Manchurian side, of the upper reaches of the river. There are, however, at present several private Chinese firms operating at various places in the vicinity.

* These figures bearing on the distribution of settlers in Manchuria have been compiled principally from materials published by or otherwise obtained from the two organizations who have preserved statistics of the movement, that is, the South Manchuria Railway Company and the Chinese Eastern Railway Company. Those of the former were prepared by the Research Department, under the direction of Mr. K. Futamura, chief of the Labor Bureau of the Company. The most recent and comprehensive of three studies published by the Research Department, all in Japanese, is "Manchurian Settlers in 1927," 176 pages; Research Publication No. 70, November 20, 1927 (Dairen, S. Manchuria). Reports of the Railway Department and of the Economic Bureau of the Chinese Eastern Railway (Harbin) have been drawn upon, as well as private memoranda submitted by their staff experts. Unfortunately the writer has not had access as yet to a valuable work in Russian recently published and now in process of translation into Chinese by the Chinese Eastern Railway.

† The Manchuria Daily News, November 8, 1911.



Firewood Boats in the Sungari

lies in the cereal and bean belt of South Manchuria which has been widened to the east with the development of the country through the progressive advance of the railways. This zone and that to the west towards Mongolia show most clearly the direct result of the construction of new railways upon the direction of immigrant settlement.

The *economic magnetism* of the upper Sungari area, which includes some of the richest agricultural lands and forest areas in Manchuria, lies in the fact that much of the country yet remains to be developed, that most of the area offers inducements by way of readily available lands for settlement and that there is an excellent market by virtue of the service of four railways which tap the zone, the Changchun-Kirin line, the Kirin-Tunhua line, the Mukden-Hailungcheng-Kirin line, and the lesser important Kaiyuan-Taolu light railway. In this zone there is more railway construction now under way than anywhere else in Manchuria. The construction of a through communication from Tunhua with the Korean (Chosen) border would open much virgin country and furnish a new produce outlet through Chosen and the Japan Sea, a route which would be of great value to Japan as a direct approach to the cereal produce, especially the rice of Kirin province.

Some idea of the forest wealth of the southeast portion of the upper Sungari country may be had from a conservative estimate made by a recognized lumber expert, Mr. Waldemar Toritch, of Harbin, who places possible production at six billion board feet. *Generally it may be said that most of the lower slopes of the Chang Pai Shan from the Chosen border to the Chinese Eastern Railway, as well as the slopes of the Hsiao Pai Shan, are still heavily wooded, progressively denser as one proceeds interior from the river banks. Japanese and Russian authorities agree that, although no accurate figures of potential production for the whole area can yet be given, it is this forest area which has the greatest commercial importance for the immediate future. The stand is generally good, the varieties, both of pine and deciduous trees, several, and the nearness to market, particularly by virtue of the facilities for outlet yet to be exploited on the Tumen river, will serve to encourage development in the immediate future. But although in this timber development there will be some demand for immigrant laborers it is rather the reaction of the industrial growth of the country which produces trade marts that leads indirectly to attracting immigrants. Such has already been the case between Kirin and Tunhua on the recently constructed railway.

The mineral resources of Kirin province have never been adequately studied. They are known to include, however, in addition to the gold and copper now being mined in the T'ien Pao Shan district contiguous to the proposed Huining (*Kainei* in Japanese) terminus of the Kirin-Tunhua-Huining railway, also aluminum in the valley of the Mutan, north of Tunhua.† These and several chemical minerals are of some importance though far less than the coal and iron at Fushun, Penhsihu and Anshan which are widely known abroad. That mining has attracted many immigrants in the recent past to this settlement zone, these mostly for a temporary residence to be sure, is evidenced, for example, by the fact that from 1918 to 1920 inclusive approximately 60,000 miners or mine laborers were actually recruited in Shantung and Chihli for employment at the Fushun Colliery. Since then the number recruited has fallen off rapidly as the period of expansion has passed and now it is unnecessary to recruit laborers, so many are they who are flooding into Manchuria. The mines do continue to employ annually and permanently large numbers of these immigrants from Shantung.

Agriculture and Permanent Settlement in the Upper Sungari Zone.—Historically both the timber and minerals have been of influence in attracting settlers to the Upper Sungari Zone, but the factor of greatest influence in attracting permanent settlers is the opportunity for agricultural pursuits. Even before the country was tapped by the building of the Changchun-Kirin Railway by the Chinese the region about Kirin was an attraction for agricultural settlers and an even larger number of summer farm laborers from Shantung. The building of the railway, however, led to rapid development, a growth which has been increased by the building of three other lines into the area. The recent opening of hitherto idle country in the interior from the Kirin-Tunhua line, opened to traffic in 1927, has already resulted in the establishment of railway trade marts on the route and during the year past a steady stream of obviously permanent settlers has poured into the country beyond Kirin.

Approximately 100,000 Chinese immigrants entered the Upper Sungari Zone in the first half of 1927, perhaps at least half that

number more by the end of the year. Of these over half were carried by the Mukden-Hailungcheng (Fêng-Hai) and the Kaiyuan-Taolu (Kai-Tao) lines, the remainder being transported over the Changchun-Kirin (Chang-Chi) railway and thence in part on over the Kirin-Tunhua (Chi-Tun) line. The distribution of settlers is general from Changchun east beyond Kirin. On the west Hsian-hsien, Tungfenghsien and Hsifenghsien have absorbed a great many, and some have moved inland even as far to the southeast as the Chientao district near the Chosen border.

Throughout this zone the standard Manchurian crops, kaoliang, millet, some wheat and much soya beans after the first year, are grown, with the addition of rice. Rice is becoming of increasing importance in Kirin province and is now grown from the Chosen border, practically throughout the province, as far north even as the Amur river and beyond Manchuria in the Siberian littorals. Introduced and still mostly produced by Korean farmers in Manchuria, many of whom incidentally are moving farther and farther north into Heilungkiang province, rice is now interesting the Chinese farmers who have learned from the Koreans both the method of cultivation and the attractiveness of the market. This is an interesting development in Manchurian agriculture and of much importance to Japan, the principal purchaser of the export.

As for the rest of South Manchuria there is nowhere sufficient concentration of settlement to form a zone worthy of special comment. The number who settle along the Peking-Mukden railway is very small, in spite of the fact that that line carried some 200,000 immigrants to Mukden during the first six months of 1927. Of those not included within the settlement in the two zones characterized as the only ones of importance in South Manchuria the majority seem to spread out from Mukden, some settling in the immediate vicinity, but perhaps the greater portion eventually finding their way to the Upper Sungari Zone. Mukden is situated in a territory already well populated which can offer no permanent inducements to settlers.

North Manchuria as a Pioneer Zone

North Manchuria, which includes practically all of Manchuria lying north of the forty-fourth parallel of latitude, is the pioneer zone *par excellence* of the Three Eastern Provinces. In size it is larger than pre-war Germany; in development it represents the economics of the frontier, not unlike the Mississippi valley of the opening years of the nineteenth century. Except for the industries developed here and there along the main line of the Chinese Eastern Railway, especially concentrated in the northern metropolis of Manchuria, the trade mart of Harbin, this wide expanse of country of varying topography remains to-day largely undeveloped.

In spite of the fact that this part of Manchuria has only seen the actual cultivation of but one half of the arable lands it includes, it has already become the principal grain producing region of the Three Eastern Provinces. Its population has increased at least ten times in the last thirty-five years and still, it appears from recent researches conducted by the Economic Bureau of the Chinese Eastern Railway, in 1926 the total population of North Manchuria was probably less than 13,000,000. The Bureau has estimated that only 15 per cent. of the entire land area of North Manchuria is now under cultivation, and that an area at least equal to this amount is fit for colonization by agricultural settlers. In Kirin province only 18 per cent. of the land area is estimated to be under cultivation; in Heilungkiang province, but a little over 8 per cent. The former can be doubled, the latter quadrupled, for such is the estimated extent of the arable area.

Thus, while North Manchuria is the largest and least developed part of the country its potentialities are the greatest, especially in agriculture, and this in spite of the less favorable access to markets than in South Manchuria. From the predominantly agricultural

* The Agricultural Office of the S. M. R. has published detailed studies of forest reserves and potential production in Kirin province which give an excellent idea of the distribution of the timber lands and of the kinds and quantities of each. See "Agriculture in Manchuria and Mongolia," Monthly Supplements, October, December and February, 1927-1928, issued by *The Manchuria Daily News* (Dairen, S. Manchuria). See also "North Manchuria and the Chinese Eastern Railway," p.189 (published by the C. E. R., Harbin, 1924, 454 pages).

† See Dr. H. Murakami, "The Geology and Mineral Resources of South Manchuria," published by the Geological Institute of the South Manchuria Railway Company (Dairen, 1926). Dr. Murakami is chief geologist of the Railway Company.

character of the country—eighty to ninety per cent. of the population are farmers—it follows that as a settlement zone North Manchuria now is and in future is destined to be of major attraction for the Chinese immigrants from the south. Over 400,000 immigrants entered this northern part of Manchuria during the first half of 1927, all but a few of them passing through Harbin, which is the immigrant dispersion center of the north.

Agricultural and Settlement.—Agriculture has been the determiner of settlement zones in North Manchuria. Of the seven separate settlement zones three are entirely agricultural, the sole industry being the tilling of the soil, and in the other four it is farming which has attracted the new settlers. Thus in North Manchuria, as in other pioneer zones of the world, it is agriculture that has the most intimate relation of all the industries to settlement. The more so is this true where the colonists are themselves farmers as are those who come to Manchuria. These very zones of settlement are the principal plain lands of North Manchuria which lie between mountainous portions, the Great Khingans to the west, the Little Khingans paralleling the Amur in the north, and the continuation of the Chang Pai Shan ranges in the east, forming a huge pocket of generally cultivable land from the valley of the Nonni in the west, across the exceptionally fertile Hulan valley, to the Sungari watershed where between low ranges of mountains the valleys and the rolling foothills are available for the plough.

Most of these mountainous areas are heavily wooded though, partly from lack of facility for transporting the timber to markets, partly from the fact that the timber in the immediate vicinity of the Chinese Eastern Railway has up to now been sufficient for local consumption, they have not been exploited to any great extent even though it is estimated that no less than forty per cent. of the entire land area of North Manchuria is covered with forests. Next to agriculture, forestry is, however, the principal industry, or, perhaps it might more accurately be termed, timber cutting. The presence of these forests does suggest that in future their wealth will attract a larger population to the country, but up to the present timbering has played but a small part in permanent settlement.

The presence of the mountains also suggest mining, though here again that industry has been of little importance in attracting permanent settlers. Except for the recent exploitation of certain rich coal mines near Lake Hanka, north of Pograditchnaya, by Russians and Chinese, certain others in the valley of the Nonni to the west, and especially the Chalainor coal fields, the mineral resources of North Manchuria have not been developed. The gold washing in the tributaries of the Amur in the extreme northern part of Heilungkiang, and in a few other places, has been haphazard and largely conducted without much capital. The "gold rush" days in Manchuria are long since past and what remains of the yellow earth awaits both capital and a change in the restrictive and practically prohibitive Chinese mining laws of North Manchuria. But the presence of minerals, not alone coal and gold, suggests as does the presence of the forests, a future which will inevitably have bearing on settlement. Particularly do the coal mines give hope for immediate development and within the past two years North Manchurian coal has begun to supply Harbin, which recently obtained 90 per cent. of its coal supply from the Japanese colliery at Fushun.

III.—The Taonan Settlement Zone

Taonanfu, the prefectural city which marks the southern edge of the Taonan Settlement Zone, is situated on the Taoer river, a tributary of the Nonni. Taonan (properly T'aonan the principal town of the district of present settlement which includes also T'ai-lai, the most important town on the newly constructed Taonan-Angangchi line between the two termini, and T'aoan lying to the north and more or less in the center of the best agricultural lands of this zone. This territory is under the administration of the civil governor of Mukden nominally, though in actual control of a local military commander allied to the Manchurian military régime. The local *taoyin* nominally is subordinate to the civil governor of Mukden. It seems essential to mention these facts as among geographers this twilight zone of administration between Manchuria and eastern Inner Mongolia is often considered as a part not of Manchuria but of Mongolia.

As a settlement zone the Taonan area has little present importance and its future is not encouraging. This is contrary to a very prevalent view which is partially the reason for the rather

minute attention here given to the character of the district and of the land contiguous to the new railways which traverse this part of western Manchuria. Before 1925 very few immigrants entered this zone in spite of the fact that the Ssupingkai-Chengchiatun Railway and the Chengchiatun-Taonan Railway made through traffic possible after November, 1923. In 1925 only about 5,000 immigrants entered the Taonan settlement zone. In 1926, however, the number had trebled, while during the first half of 1927 approximately as many entered the zone as during the whole of North the previous year, a number estimated to be about 15,000. When compared with the hundreds of thousands of immigrants who entered other parts of Manchuria during the same period it is evident that these few do not make of the Taonan zone one of the principal places of absorption of immigrants, contrary to a somewhat general belief. It is further of interest to note that no more than 6,000 have settled south of Taonan in the territories served by these railways in the entire period since the opening of traffic through to Taonan in the autumn of 1923.

Partly to obtain the facts with reference to settlement in the territory traversed by these new railways in western Manchuria the writer traveled over the Taonan-Angangchi line, the Chengchiatun-Taonan line, and the Ssupingkai-Chengchiatun line during the summer of 1927. Inquiries made of local Chinese station masters from Angangchi to Taonan elicited the view that of the immigrants who were being carried by the railway a very large number of them continued north all the way to Angangchi, and from there on foot across the Chinese Eastern Railway to Tsitsihar, seventeen miles north of the main line of the Chinese Eastern. From Tsitsihar they disperse still farther north in the valley of the Nonni river. There is some settlement adjacent to the railway but it was not especially evident during the months of mid-summer. Such as there is, is in the Taonan area in the angle formed by the Taoer river and the Nonni.

The reason for this rather small absorption of immigrants in western Manchuria lies in the fact that the country, generally speaking, does not have much natural fertility. The soil quality adjacent to the railways all the way from Angangchi to Ssupingkai is very irregular. South of Angangchi it is sandy and there are traces of alkali areas. Nearer Taonan in the river valleys the soil improves, but here too it is streaked with the white knolls which appear rather to be drifted sand than alkali. The alkali is evident only in the lowlands and depressions between these knolls.

The whole territory from Angangchi to Chengchiatun is generally not under cultivation, grazing predominating with only limited areas which produce the usual Manchurian staples, principally kaoliang and soya beans. The year 1927, generally, produced a crop of kaoliang in Manchuria both tall and thick, but in this part of Manchuria it was very evident that the natural fertility of the soil was far inferior to the lands which lie to the east about Changchun or Petuna for the kaoliang was short and the stand poor. Only with plentiful rains and consistent is there assurance of much agricultural production in this area. The country, it would seem, except for localized areas about Taonan, is destined to remain much as it is for the time being, a grazing country which produces sheep, horses and cattle. These characteristics of the territory traversed by the new railways from Chengchiatun to the Chinese Eastern Railway account for the relatively few immigrants who have entered the Taonan settlement zone to remain permanently. In passing, it is well to draw attention to the fact that the railways which traverse the country have as their ultimate object the freights to be had from Mongolia or from the very rich areas which lie about Anta on the Chinese Eastern Railway, which latter traffic will in part be diverted over these lines when once the question of connections with the Chinese Eastern Railway at Tsitsiharchan is adjusted.

IV.—The Upper Nonni River Zone

The Upper Nonni River Settlement Zone, occupies the extreme northeastern section of the great Manchurian plain. Here the river flows south toward Tsitsihar and Petuna where it joins the Sungari, and above Tsitsihar the country it traverses is predominantly a plateau sloping to the south and intersected by the tributaries of the river. In these valleys are cultivable lands. On the whole, however, though Tsitsihar has long been a trade mart of importance as an outpost for supplying the frontier country of forests and fur-bearing animals in the Great Khingans and the headwaters of the Nonni, the general character of the soil may be characterized as

mediocre. Most of the land which is cultivable has never seen the plough. The tending of flocks of sheep and ranging horses—this is, indeed, one of the leading sources for the Manchurian ponies—is its principal occupation. Geographically and political the zone marks the transition between the great prairie country of Mongolia, the Barga district so-called, and the central Manchurian plain. Because for long it has been an outpost of Mongol influence this settlement zone of the Nonni above Tsitsihar has had much political significance. For the Russians it has been a stepping stone to Mongolia and a link with the Amur country.

As but of mediocre agricultural importance it has not attracted many settlers. No railway serves the region and the Nonni is not the best for navigation even when its frequent floods subside. There is, however, a long high road for carts from Tsitsihar north to Mergen (Nungchiang) roughly paralleling the river and from Tsitsihar there is, of course, the outlet on the Chinese Eastern Railway. Tsitsihar has become, however, a trading post of importance and is now the place of assembly for those of the immigrants who enter the Nonni Settlement Zone. It is the provincial capital of Tsitsihar and besides its connections with the frontier country to the north has local milling industries which supply native demands and produce export for the railway. But the zone now marks the terminus of the north and south railway system of western Manchuria, and Angangchi, near Tsitsihar across the Chinese Eastern, is the end of Taonan-Angangchi line recently finished. As such the upper Nonni area is the natural receiving station, as it were, for the immigrants who come both over the west Manchurian lines and by way of the western section of the Chinese Eastern Railway. Since no less than 35,000 immigrants were carried by the Chinese Eastern from Harbin to Tsitsihar station during 1927 it may be presumed that the greater part of them actually entered the Upper Nonni Settlement Zone. Below Tsitsihar and the east for a short distance the soil is very poor and offers no inducements to settlers. There is in addition a considerable movement of immigrants from the west Manchurian lines, those who have come through Taonan and Angangchi.

The future of this zone depends very much on whether or not the extension of the Taonan-Angangchi Railway, now planned to continue to Mergen, actually is built. If so it will offer a ready communication with those parts of the Nonni area which have attraction for settlers, more especially those areas which lie east of the river and blend into the very fertile valley of the Hulan river directly north of Harbin.

V.—The Changchun Northern Zone

The settlement zone which lies to the north and west of Changchun, the great distribution center for the Chinese immigrants who have come either by sea in part or entirely by land from Shantung and Chihli, is the first North Manchurian settlement area which lies on the main route of immigration. An oval drawn to include the principal places of present settlement within this zone from a point east of where the Sungari river is crossed by the southern branch of the Chinese Eastern Railway (Hsiao Chengtzu), where this zone fuses with that of the Upper Sungari, would extend to a western point half way between the confluence of the Nonni and the Sungari and the Taonan-Angangchi Railway. This would be its longest diameter. The shorter would be the greater portion of the southern section of the Chinese Eastern Railway, thus showing the entire Changchun Northern Settlement Zone to include the town of Nungan, northwest of Changchun, and the angle formed by the Sungari river near Petuna (Potune). To the south of the zone, especially about Changchun, is the great central Manchurian bean belt. This is the fertile prairie country which lies between the upper Liao river and the central Sungari sections, and stretch to the west to merge into the rolling prairies about Taonan.

The stage of agricultural development in this settlement zone is the farthest advanced of the six settlement zones in North Manchuria. Most of it is well populated and especially so near Changchun on the south and concentrating at trade marts on the Sungari. Where the Nonni river joins the Sungari to make of the combined stream one of sufficient size and depth for steam navigation to Harbin and beyond a cluster of closely situated towns has also concentrated population in this western portion of the zone.

As the Sungari river system is the principal exception in Manchuria to the present fact that it is the railways which are generally responsible for dispersion of immigrants and hence partially the cause for the actual creation of the settlement zones, it may be well in brief to characterize the rôle this mighty river has played in settlement of Manchuria. Like the Liao to the south

which centuries ago furnished the means of access to southern Manchuria for the first Chinese colonists the Sungari has been the natural water magnet to whose banks the colonists have come. To-day the whole course of the Sungari river, over a thousand miles in length, is settled with varying degrees of density by Chinese. Even the nomadic peoples of past centuries were attracted to the banks of the river, but these have long since been displaced entirely by the Chinese until only the fast vanishing remnants of their once vigorous stock can be found far to the north along some of the tributaries of the still mightier Amur.

Chinese farming industry is usually of the character which seeks the closeness of towns. If in a new country, the Chinese settle in closely congested hamlets, not more from the possible need of protection from without than from the fact of traditional communal customs within. Nowhere in Manchuria is this better exhibited than along the course of the Sungari where the river traverses the Changchun Northern Settlement Zone. Although for many decades much of this country has been well settled especially along the river there are still wide acres not far distant which well might be cultivated more intensively or initially brought under the plough.

As a water communication the Sungari river is unique among rivers in Manchuria.

The Sungari has been both the lode and the lodestone of the immigrants. As a watercourse, navigable at least by junks for almost the whole of its length from above Krin to where it empties into the Amur a thousand miles below, it has furnished a communication, however treacherous in places, for the Chinese settlers who had no other access to the outside world. As a source of wealth it drained and watered and often heavily wooded fertile lands and its waters furnished fish for those who lived along its banks. The influence of the Sungari river on settlement below Harbin will be treated together with the Lower Sungari Settlement Zone.

Being on the main route of immigration into North Manchuria, the Changchun Northern Zone each year has absorbed many of the Chinese settlers who by the hundreds of thousands now detrain annually at Changchun. In 1927, of the 435,000 immigrants who during the first six months detrained at Changchun or arrived there on foot from the south—a number estimated to be 50,000—it seems that about 35,000 actually remained in the zone characterized. Of these the greater portion, upwards of 25,000 entered the zone to the northwest of Changchun, especially about the Nungan district. Most of the remainder dispersed on both sides of the southern section of the Chinese Eastern between Changchun and Harbin, a rolling prairie country generally well cultivated near the railway though partly given over to good grass lands.

VI—Western Zone of the Chinese Eastern Railway

Of the flood of immigrants which annually pours through Harbin from Changchun—about 400,000 during the first six months of 1927—the greater part continues east into and beyond the Eastern Settlement Zone of the Chinese Eastern Railway, a smaller group go west from Harbin, into and beyond the Western Settlement Zone of the Chinese Eastern while the remainder divide into two courses, the one, much the smaller, spreading out in the Hulan Valley Settlement Zone, the other, destined to be perhaps the most important of all, following the course of the river into the Lower Sungari Settlement Zone. During the past few years the ratio of dispersion in these zones, except for that in the newly opened Hulan valley region, and the steady increase into the Lower Sungari country, has been much the same, especially as between the two zones of the Chinese Eastern Railway. The eastern section has generally taken almost twice the number of the western.*

The Western settlement zone of the Chinese Eastern Railway because traversed and served by that line has drawn the population to the trade marts and their immediately contiguous territory, while to the north the population diminishes in density very rapidly. Most of this zone is exceptionally fertile. Anta, the principal trade mart of the zone, lies in the midst of that black loam country which has made of it one of the finest wheat and bean producing sections

*See K. Futamura "Manchurian Settlers in 1927" (Dairen, S. Manchuria), p. 74ff. S. Nakajima "Questions Pivoting upon Immigrants into Manchuria," *The Monthly Supplement of the Manchuria Daily News*, February 1928, p. 5 (This is based on the detailed study in Japanese just referred to). Both of these articles are based on the returns published by the Chinese Eastern Railway periodically throughout the year. These have been verified in a private memorandum to the writer from Mr. I. Pavloff bearing on dispersion of immigrants in North Manchuria and prepared in February 1928.

of Manchuria. It is the produce from about Anta which is the mainstay of the produce traffic of the Chinese Eastern Railway bound for Vladivostok. The unusually thick black soil, through the full depth of the railway cuts about Anta, may be seen from the Trans-Siberian trains that form at Harbin. Farther to the west near Tsitsihar, in the lowlands that produce the marketable soda and salt, the soil is naturally far inferior. The whole zone is almost exclusively agricultural.

Of the approximate 90,000 Chinese immigrants who entered this zone about one-third settled near Anta. Of the remainder about three fourths went all the way to Tsitsihar. It thus appears that at least 35,000 were carried by the Chinese Eastern Railway to Tsitsihar to which should be added those who arrived on foot. But as Tsitsihar is rather a distributing center for immigrants than a center of actual settlement it may be presumed that the majority of these entered the Nonni river valley. During the whole of the year 1927, however, it appears that at least 75,000 immigrants settled or entered to remain for the year at least in the Western Settlement Zone of the Chinese Eastern.

VII.—Eastern Zone of the Chinese Eastern Railway

The Eastern Settlement Zone of the Chinese Eastern Railway, like that of the Western Zone, lies immediately along the railway itself from Ashiho to Ninguta and from there still farther east to the Sino-Russian border at Suifen or at Pograditchnaya. Most of the country beyond Uchimiho is mountainous as the railway cuts through the gaps in the northern ranges of the Long White Mountains. On both sides of the ranges, however, though more broadly toward Harbin and the west, stretch rolling prairies which tend to flatten eventually into the great Manchurian central plain. It is in the spurs of the Chang Pai Shan from Uchimiho across to Hailin near the Mutan river (Hurka) and Mulin beyond that the timber concessions obtained to supply the railway with necessary ties, timbers and lumber are situated. This zone is therefore at once agricultural and important for its lumber production. The agricultural produce of the region is extremely varied and includes wheat and rice. Up country in the river valleys, as in so many parts of Heilungkiang which has long been a source of supply because of its distance from a few wary eyes in Peking, the poppy is grown. But the poppy seems to have reduced in Manchuria with the improvement of transportation by railway. Incidentally, however, I have seen poppy fields in many places in Krin and within five hundred feet of the railway near Liaoyang.

Because about one half of all the immigrants who come to Harbin continue east over the Chinese Eastern Railway or into this settlement zone it has been presumed that this is the most important of all the settlement zones in Manchuria. This, however, is untrue. The zone of the Lower Sungari which lies to the north is at least of equal importance now and in future is destined to be more so. Practically 40 per cent. of the immigrants who entrain at Harbin to enter this zone leave the train in the vicinity of Uchimiho and Imienpo. These stations, because they lie near the tributary which enters the Sungari at Fengcheng, are but *points d'appui* to the Lower Sungari Settlement Zone. To ascertain accurately the number of these immigrants who settle along the railway or that larger portion who eventually are drawn into the Sungari region is impossible. Perhaps the number who eventually become settlers in the valley of the lower Sungari is about half of the total who enter the eastern zone by rail from Harbin, or in the first half of 1927 about 100,000. A like number perhaps settled in this zone itself.

But the distribution is irregular and at least several thousand in 1927 went all the way to Lake Hanka in the vicinity of the coal mines of that region. Thus, while the Eastern Settlement Zone of the Chinese Eastern seems to receive the largest single group of the immigrants to North Manchuria, a large part of them eventually find their way still farther north to the Sungari's banks.

VIII.—The Hulan River Zone

The settlement zone of the Hulan river valley has only recently become important. For a long time it has been but partially developed. The Hulan valley, like the region about Anta, is exceptionally fertile and the produce of this section is a great part of that carried to Vladivostok by the Chinese Eastern Railway. The region is served by the Hulan-Hailun Railway, which was opened to traffic from Hulan to Suihua in January 1927. This line which has at various times since 1905 been contemplated by several

foreign groups and which was definitely granted to the Russo-Asiatic Bank for construction in 1916, though abandoned during the Great War, has been built with private Chinese capital. It is now being extended north to Hailun and the company plans within three years to continue the line to Mergen. The traffic returns of the new railway have more than justified the hopes of its builders. Already the export of grain from the territory served by the railway (not all is carried by the railway, however, as there is still much cart traffic) is in the neighborhood of a million tons annually. The management of the Railway estimates the population of the area served by the line as about 3,000,000, a figure larger than usually thought to be the case. A progressive increase both of production and of cultivated area is anticipated in the Hulan settlement zone.

The new railway by creating trade marts and giving vigor to such towns as Suihua and Hailunfu has served to attract immigrants to the areas yet undeveloped. At least 10,000 immigrants entered the zone from Harbin during the first half of 1927. When the railway is completed northwest to Mergen (Nungkiang) over a total distance of nearly three hundred miles it is anticipated by the management of the line that the acreage thus served will be four times that of the present. There is little doubt but that within the next five years the Hulan River Settlement Zone will absorb a hundred thousand immigrants.

IX.—The Lower Sungari Settlement Zone

Measured alike by present influx of immigrants and by prospects for the future absorption of these Chinese who come from the south, the zone of settlement characterized as the Lower Sungari River, is the most important in Manchuria. The area is served by the mighty Sungari river, the longest and most serviceable water communication entirely within Manchuria's boundaries. The zone itself is located on both sides of the lower Sungari river below Harbin, but for convenience not only the territory contiguous to the river but that which lies still farther to the north in the angle formed by the confluence of the Sungari with the Amur is also included. The settlement now in progress in the Sungari valley blends by imperceptible degrees of change into that of the lower Amur in North Manchuria. Because the Sungari below Harbin is navigable not only by the ubiquitous junks, which give it the appearance of a south China river at times, but also by deep draught steamers which for decades now have plied the river, the Sungari offers not only the best but the only direct communication with this settlement zone. No railway pierces the lower Sungari valley as yet except the Chinese Eastern Railway which edges the right bank tributaries of the stream near Harbin.

The rôle which the Sungari has played in attracting settlers to its banks has been characterized for the sections of the river above Harbin. Between Petuna and Harbin there is a lively traffic on the river, but between Harbin and T'ungkiang, where it joins the Amur to flow to the southern straits of the Okhotsk Sea, the river carries in this section no less than 75 per cent. of all the cargoes of its entire course.* And it is interesting to note that while formerly most of the produce of the Sungari was carried down stream to supply the Russian Far Eastern settlements on the Amur, the wheat for the Russian mills, and the beans for eventual export from the port of Nikolaevsk at the Amur's mouth, now all this is changed and all the produce of the lower Sungari is marketed through Harbin.† The service of the river has been drawn upon by the Chinese immigrants who for decades have slowly seeped into this area, but who in recent years have come by the thousands principally by boat down the river or overland or down the rivers tributaries from the zone of the Chinese Eastern Railway. Accessibility, plus the fact that the river by building towns along its landings has necessitated more careful administrative attention on the part of the officials and hence has given a measure of protection for life and property not so assured in the uplands from the river, have fostered increased settlement. But that factor which is of greatest importance is the natural fertility of the soil in the valley of the Sungari.

*Lubimoff and Gorlanoff, "The Sungari River: economic description of the most important landings and the districts of Heilungkiang and Kirin provinces which they serve," *Manchuria Monitor*, No. 3, 1927, pp. 11-17.

† The most extensive materials in English bearing on the characteristics of the North Manchurian industries are contained in the publication of the Chinese Eastern Railway titled "North Manchuria and the Chinese Eastern Railway" (Harbin, 1922).

Particularly is the land along the banks of the Sungari fit for agricultural development. The Sungari below Harbin flows through a rolling or even rugged country through much of its course and its basin is not part of the great central Manchurian plain. But the land of the valley and most of its tributaries is fertile, as evidenced by the fact that even at the present stage of development the landings of the river collect some twenty million poods (one pood equals 36 pounds) of cereal produce annually for transportation by river craft.* Nor does this include that carted overland to the stations of the Chinese Eastern Railway. As the cultivated area in the Lower Sungari Settlement Zone is still considerably smaller than that which profitably can be tilled there is a certainty that production will increase progressively with settlement.

Available land for agriculture, that factor of prime importance, is supplemented by the presence of wood for fuel and for construction of dwelling houses which does facilitate settlement. Much of the country along the river is wooded though the marketable timber now lies rather back in the tributaries. The scrub timber and second growth since the cuttings of twenty years ago are of value to the settlers.†

It follows that practically all of the Chinese immigrants who now are penetrating so far north into the Lower Sungari Settlement Zone are farmers or farm laborers with their families. Less and less are the immigrants attracted by pursuits other than farming although in 1927 a small number actually proceeded beyond the river districts to take up work as section hands on the Ussuri Railway. From Harbin down stream the population diminishes progressively as one approaches the Amur with variations in concentration at three or four of the important trade marts on the route, especially Sanksing, a little less than half way from Harbin to the Amur. Mulanhsien, some seventy miles from Harbin, marks the beginning of the region which remains comparatively undeveloped and from this point on down the river the zone offers the greatest attractions for settlers. To this should be added that of the Lopei district farther north on the Amur. This latter roughly triangular territory near the confluence of the two great rivers drawn from the three towns, Kouch'uan, T'ungkiang and Lopei as apices, is now attracting many settlers and the local authorities, particularly the district magistrate of Lopei, are offering vast areas of virgin lands rent free to the immigrants. San Hsing, which is situated approximately in the center of present settlement, is very near the fifteen thousand acre experimental ranch obtained from the Chinese authorities by the former customs official, Mr. L. S. Palen, and which was later managed by the late Major Morgan Palmer whose high motives and untiring energy made of the undertaking a most valuable object lesson.

To give accurate figures of present annual immigration into the zone of the Lower Sungari is impossible. Perhaps no less than 150,000 settlers entered the zone in 1927, or even that many in the first half of the year. The difficulty of stating more or less exactly these numbers arises from the fact that no figures are available for the large group who trek across country from the railway north or down the tributaries to the Sungari especially to Fangcheng. Some idea of the general movement on the river, however, can be had from the fact that during the first six months of 1927 approximately 40,000 more passengers boarded boats (presumably steamers) at Harbin destined down the river than landed there. During this same period approximately 50,000 immigrants arrived in Harbin over and above those who subsequently went east or west into the zones served by the Chinese Eastern Railway. Nor is it possible to estimate the transportation of immigrants by the many junks which ply the river.

That the Lower Sungari Settlement Zone is not only now but in future is destined to continue the zone of greatest attraction for the Chinese immigrants from Shantung and the south is evident alike from the present movement and the potentialities the region represents. The late Major Morgan Palmer, than whom none had more intimate acquaintance with the heart of the region, characterized the Lower Sungari zone as "indeed a country of the future, where natural resources are almost unlimited, and an abundant labor, near at hand only waits for the opportunity to increase the world's food supply.

Economic Effects of Colonization

Obviously the greatest effect of the whole movement to Manchuria, that which is of the most profound human value, is that upon

the immigrants themselves. Truly they have bartered their birth right of living in their ancestral home for a mess of pottage, but what a welcome mess. However great their hardships in Manchuria they can at least be survived. Not so now in Shantung where famine stalks the land rendering hundreds of thousands homeless, starving and destitute. For these Manchuria is, indeed, a promised land. That the great majority of them will find a measure of prosperity and happiness is self-evident, climate, bandits, taxes, official extortion, land "sharks" chicanery and bad money to the contrary notwithstanding. No doubt a part of their earnings will in future, as in the past, find its way back into Shantung to continue that very interesting economic relation between Manchuria and Shantung. But the colonists themselves, after the usual unsettlement of the first year when the majority of them will work as laborers and not as land owners or even lease holders, eventually will grow in economic strength; at least they will produce the means of sustenance for themselves. But the variant vicissitudes of these settlers during their first few years in Manchuria is a subject beyond the scope of this study.

In twenty years the population of Manchuria seems to have increased by ten millions. The degree to which immigration is responsible for this is not easily known. As early as 1907 an investigator placed the number of permanent settlers for the year at not less than 20,000. In 1920, from British consular estimate, 100,000 were assumed to have settled in Kirin province alone in the previous eight years. Since then immigration has increased rapidly and in 1926 approximately 250,000 of those who arrived during the year seemed to have remained in Manchuria. The following year no less than 57 per cent. remained in Manchuria, or approximately 550,000.

Of those who remain in Manchuria only a part actually reclaim wastelands, the others hiring out their services, not infrequently in regions already fairly well under the plough. In Harbin during the summer of 1927 several residents whose occupations gave them considerable intimacy with the conditions of settlement in North Manchuria estimated for me that principally due to the continuous stream of colonists into the region the cultivated area was increasing from five to fifteen per cent. annually. This was especially noticeable in 1926 and 1927. To indicate the effect of recent settlement upon cereal production in Manchuria, however, is extremely difficult. The generally bumper crops in Manchuria in 1927 were due far more to a favorable season than to increase of cultivated area. Further it is important to note that over two-thirds of all a given farmer produces is actually concerned in his home, another ten per cent. is marketed locally, and it is only when his crop is exceptionally good that a fourth of the whole actually is exported beyond his own locality. Having allowed for this increased native consumption of produce, however, there is no doubt but that each year an ever enlarging percentage of the export increase is due to this progressive settlement. The grain export over the Chinese Eastern Railway from North Manchuria, the principal field of settlement, has increased during the last five years by 75 per cent., and in the last ten years has trebled. Observation of isolated zones of settlement in this matter is far more instructive than resort to statistical totals.

Of importance too is the effect of this immigration and settlement upon markets, markets which vary from cotton drills to railway tickets. Twenty years ago a Japanese who was president of a leading cotton spinning company in Osaka characterized the Manchurian market as one of the best in the world for cotton textiles. To-day it is a market for very much more. True, most of the population require little of manufactured goods other than clothing; they are still in the stage of production for self-consumption. But from 1916 to 1925 imports into Manchuria by way of Dairen, the principal importing port, increased 125 per cent., considerable, indeed, but far less in proportion to the rapid increase of exports. Of the imports, however, a very important item is that of railway materials for construction, service and maintenance, 80 per cent. of all the rails which China received in 1926 going to Manchuria. It is obvious that the extension railways is at once fostered by and is itself the cause of immigration into Manchuria. Except for the Sungari river the railways are almost the exclusive routes of approach to the settlement zones, albeit many of the immigrants walk the tracks, even from Dairen to Harbin.

* Lubimoff and Jorlanoff, p. 11.

† Major Morgan Palmer, "Colonizing in Manchuria" (Undated reprint from *The China Weekly Review*, perhaps 1924).

The Business of Japan

By K. Kodama, President of the Yokohama Specie Bank

In the course of his annual report, Mr. Kenji Kodama, President of the Yokohama Specie Bank made the following interesting remarks:—

CONCERNING our foreign trade for the half-year, exports, imports, and the excess of over-imports amounted to 1,043 million yen, 933 millions and 110 millions respectively, and even if the adverse balances of Taiwan and Chosen be deducted from the last figures, there still remains a favorable balance of about 80 million yen, which shows a good improvement over the similar balance, for the corresponding half of last year, which amounted to 34 million yen. Taking our foreign trade as a whole, we find that of the respective items of our exports in relation to the total figures, raw and semi-raw materials represent 48 per cent. of the total value, while wholly-manufactured goods and food-stuffs represent 44 per cent. and 8 per cent. respectively. Of our exports, raw silk stands at the top with a total of 383 million yen, with cotton goods, value 206 millions, next, the two together forming more than 56 per cent. of the total. To make a similar comparison in the case of our imports, we find that raw and semi-raw materials, wholly-manufactured goods, and foodstuffs represent 70 per cent., 17 per cent. and 13 per cent. respectively, with raw cotton, valued at 234 millions, forming the largest item under the first-named category, representing 40 per cent. thereof and 25 per cent. of the whole imports.

Let us now review the state of our trade with various countries. To take Asia first, the figures for our exports and imports are, respectively, China, 174 million yen and 105 million yen; Kwantung Province, 49 millions and 42 millions; Hongkong, 34 millions and 800,000; British India, 92 millions and 81 millions; Straits Settlements, 18 millions and 21 millions; the Dutch East Indies, 39 millions and 50 millions; French Indo-China, 3 millions and 9 millions; and the Philippine Islands, 17 millions and 10 millions, while taking Asia as a whole, including the countries not specially mentioned, the balance of trade was in our favor to the extent of 99 million yen. Our trade with Europe ended in an adverse balance of 121 million yen, our principal connections being with Great Britain, 36 millions and 83 millions; France, 25 millions and 14 millions; and Germany, 5 millions and 61 millions, these figures representing exports and imports, respectively. Trade with North and South America resulted in an excess of exports amounting to 144 million yen, our principal dealings being, in exports and imports respectively, with the United States, 433 millions and 286 millions; Argentine, 5,800,000 and 900,000, and Brazil, 600,000 and 120,000.

Trade with the whole of Africa amounted to 29 million yen, 16 millions and 13 millions, respectively, in exports from and imports to Japan and "Over-exports," and of this trade Egypt contributed 16 million yen in imports from Japan as against exports value 9 millions. Finally, our exports to Australia amounted to 32 million yen and our imports to 55 millions, leaving a balance against us of 23 millions.

Reviewing the ratios of the contributions of the principal countries towards our foreign trade, we find that United States stands at the top with 36 per cent., while China, which includes Hongkong and Kwantung Province, with 20 per cent. comes next, with British India, Great Britain, the Dutch East Indies, Australia and Germany following in order of importance with 9 per cent.,

6 per cent., $4\frac{1}{2}$ per cent., 4.4 per cent. and 3.3 per cent. respectively.

Turning our attention now to our foreign exchanges, and taking a retrospective view of them, we find that at the outset of the half-year exchange on America, for example showed a top-heavy tendency, as besides our exports, which, contrary to expectation, remained in an indifferent state, China was constantly operating on the firm silver market. However, with the appearance of a better condition in our foreign trade and the declining tendency of silver, the exchange rose as high as $47\frac{3}{8}$, but in September, investments in foreign stocks, due to the uneven accumulation of funds here, commenced in earnest, while China's bearing operations in yen became again active with higher silver. As a consequence, the exchange took a downward path and eventually dropped to $\$45\frac{5}{8}$ by the middle of November, the lowest rate recorded during the half-year. Information about the flotation in New York of some loans to Japanese interests served, however, to improve the exchange, and by the end of the half-year its recovery to the extent of $\frac{7}{8}$ was registered, and at the end it stood at $\$46\frac{1}{2}$. Meanwhile, rates on England, France, and Germany had been fluctuating up and down, the highest, lowest, and final rates being

2s./- $\frac{1}{4}$ d.	1s./10 $\frac{7}{8}$ d.	1s./10 $\frac{7}{8}$ d.	on England,
Fcs. 12.40	Fcs. 11.45	Fcs. 11.75	on France,
Mks. 2.05	Mks. 1.90	Mks. 1.93 $\frac{1}{2}$	on Germany.



Mr. Kenji Kodama

Rates on India and Java, although they often fluctuated up and down within a small range, generally speaking showed a downward tendency, and were quoted at Rs. 126 $\frac{1}{4}$ and Guilders 115 at the end, as against Rs. 130 and Guilders 117 $\frac{1}{2}$ at the beginning of the half-year. On the other hand, the rate on Singapore, which was Y.119 at the commencement of the period registered a steady rise and reached at one time as high an unfavorable rate as Y.125, but improved again to Y.123 by the end. As regards exchange on China, owing to the fact that the price of silver during the half-year mostly fluctuated between 26 pence and 27 pence, except during the months of August and September when a state of depression was in existence, and as, moreover, there was not much change in the value of the yen during the six months, the rate on Shanghai, to take that as an example, only varied to the small extent of about nine per cent. The highest and lowest rates recorded during the half-year being Taels 77 $\frac{1}{2}$ and Taels 70 $\frac{1}{2}$, while the period closed

with the rate at Taels 72 $\frac{1}{4}$ as against Taels 73 at the beginning.

Let us now review the general conditions prevailing in those countries where we have Offices of our own.

As to the Dutch East Indies, the sugar harvest, such an important factor from the economic aspect that much may be said to depend thereon, was more abundant than ever known before, totalling 2,360,000 tons, an increase of 400,000 tons over last year's. Much, however, was left to be desired in connection therewith from the business point of view, as the price was on the decline, owing to the fact that sugar harvests were abundant throughout the world. Rubber, next in importance, had an indifferent time, except for a little animation towards the close, due to American orders, and the same may be said for tapioca, coffee, etc. The natural consequence of all this was that imports were inactive, and as merchants were harassed by overstocks, nothing noteworthy in new orders for piece goods was to be remarked, though such goods usually comprise 30 per cent. of all imports. It was thought that Japanese goods

would be severely hit as the result of the boycott instituted by Chinese merchants there, influenced by propaganda against the military measures taken in July by the Japanese Government in the Shantung Province of China, but luckily the boycott movement subsided and was soon discontinued completely. As time went on, therefore, accumulated stocks were gradually disposed of, causing new orders to be placed now and then towards the close of the year, which finished with a brighter outlook, as other goods were likewise being taken delivery of in a satisfactory manner.

Money, rather easy in the earlier part of the term, owing to the slackness of exports, began to tighten up after November, when some transmission of funds to Singapore took place, due to the enlivened state of the Rubber Market, and the year finally closed with money in a quite stringent state, the result of a big late export of sugar to Europe and British India.

Coming to Singapore and the Straits Settlements, Rubber, the most important product of this region, suffered from the concerted action taken by the American Consumers Pool, and passed the greater part of the term with business in a dull state on the whole, the price showing a descending curve. Already in July the quotation was as low as 17d, and it had dropped further to 16d. by the middle of October. Some recovery was, however, witnessed afterwards, due to certain measures taken during November and after, such as the revision of the basis for assessing the standard of production and tapping, the limitation of the availability of unused coupons, and the keeping of a stricter watch for smuggled exports, until, through the hasty American bids noticeable from the end of November, the price soared as high as 20d. towards the close of the year. Tin, the product next in importance, also showed a decline in price from \$146½ at the opening of the season to \$135 at the close, and the natural consequences of the poorer returns from the two principal products were a shrinkage in purchasing power and dulness in the import business.

Thus the half-year passed in an indifferent state in general, though some better feeling was noticeable at the end.

French Indo-China enjoyed a high tide of prosperity in trade in general, with good exports, especially of Saigon rice, the chief item, 560,000 tons of which were shipped as against the forecast of an exportable surplus of 300,000 tons. Much improvement was consequently caused in the market for imported goods, and the stocks carried over from last term were gradually digested. On the other hand, however, the general excise duties, put on to cover fiscal deficiencies in disregard of the fierce opposition of several Chambers of Commerce and Agriculture were severely criticised on the ground that a general rise both in prices and wages would be the inevitable result thereof, and it is clear, therefore, that a dense cloud is hanging over one side of the economic sphere there.

As regards the Philippine Islands, thanks to the excellent climatic conditions that prevailed there during the period, the crop of rice especially, and of other agricultural products in general, was so abundant that the rice embargo, in force since August, 1919, was declared raised on November 1, while imports of that cereal, on the other hand, sank to about one-sixth of those for the corresponding period of the previous year. Further, the increase in the volume of sugar, hemp and copra exports more than made up for the low prices quoted for those commodities, so that everything contributed to an accumulation of surplus funds with which the rural population could afford to buy more imported goods, and so both sides of foreign trade enjoyed a comfortable time.

Sino-Japanese Trade

Last in review comes China. There the revolutionary activities of the Nationalists and the restlessness and troubles connected therewith, continuing from the preceding term, have naturally done considerable damage in commercial, financial and economic fields in general. There is no need to emphasize how very detrimental to trade of every description were occurrences such as the unceasing issue of public bonds, the exaction of inland taxation as well as the imposition of additional export duties and a new duty on imported luxuries, the embargo on cash and bar silver exports, etc., which were introduced as measures for meeting the heavy military expenses in connection with the northward march undertaken by Chiang Kai-shek, the Commander-in-Chief of the revolutionary armies, during the five months preceding his renunciation of office

on August 12, due to internal dissensions in his Party. In addition, the attacks on Nanking by Sun Chuan-fang's Army, after the fall of Chiang Kai-shek from power, caused great interruption and interference with transportations in the Yangtze Valley.

In Canton, a compulsory loan was levied by the Provisional Government to the extent of 10 million Dollars, while later a coup d'état against the Hu Nan-min Party was successfully carried through. Further, the estrangement of the three military cliques of Canton, Hankow and Nanking, after a shortlived coalition, caused the storm to break forth anew, and led to the devastation of Anhui, Kiangsi, Hupei and Hunan Provinces. To the north of the Yangtze, what with Feng Yu-hsiang on the march towards Honan since September and with the Shansi army seizing Changchiakou, no end was to be seen to the strife between the old Military Lords and the revolutionary Nationalists, while disintegration and lack of loyalty on both sides was daily in evidence. It could only be expected, therefore, that with this state of affairs, accompanied by the exaction for military funds and the dislocation or destruction of the transportation system, trade and commerce went away and became in a quite chaotic condition.

To mention a few figures in connection with foreign trade, raw silk stands in the forefront with exports from Shanghai of 58,300 piculs valued at 58,500,000 Taels, which figures show a shortage of about 6 per cent. and 17 per cent. in quantity and value, respectively, compared with the exports for the corresponding period last year, which amounted to 62,000 piculs, value 59,700,000, exclusive of Canton silk shipped through Shanghai. Exports of this commodity from Canton were also lower to the extent of 12 per cent. totalling only 22,000 piculs, whilst those of peanuts and peanut oil from Shantung, and of cotton, linseed, poppy-seed, rape-seed and pulse from Tientsin showed little activity. Imports into Shanghai of cotton yarn of coarse count decreased, but this was somewhat compensated for by the increase in fine counts and gassed yarn, so that the total imports of cotton yarn of all kinds pretty well balanced last year's figures, though those of cotton textiles fell off by about 8½ per cent. Imports through Tientsin of yarn and textiles likewise decreased, falling off by about 20 per cent. and 50 per cent. respectively. Other articles, such as sugar, wheat and flour, presented similarly declining statistics, and so trade in both North and South may be said to have continued to be quite dull on the whole. The efflux of silver from Shanghai towards Hangchow, Nanking, Hankow and Tientsin was counterbalanced in some degree by the influx of the newly-minted Dollar coins, the ultimate result being that the stock of silver at the end of the term amounted to 53,957,000 Taels and 75,920,000 Dollars as against 76,310,000 Taels and 73,030,000 Dollars at the beginning. Sluggishness on the part of the foreign Banks and tightness on that of the Chinese were the distinguishing features of the monetary conditions prevailing during the first half of the period but the reverse was the case in the second half. On the whole, however, financial circles were apt to be cautious, more especially as the military disturbances gradually spread in dimensions. Shanghai exchange on London, to take this as representative of China's exchanges in general, showed a fluctuation of 8.3 per cent., the highest quotation touching 2s./7½d. and the lowest, 2s./5d. During one month, particularly, from the beginning of August to the beginning of September, the exchange was subject to violent fluctuations, first of all because of the report of sales of bar silver by the Indian Government, and, later, because of the dropping of the Indian Reserve Bank Bill, but for most of the half-year the rate moved up and down around 2s./6d.

As regards Hongkong, trade there was depressed and lethargic throughout the half-year, influenced by the general disquietude in Canton already referred to.

Turning to the region of Manchuria, the mobilization of the Fengtien Government's armies in the North during the past two years had already caused heavy financial embarrassment, and this, followed by the excessive issue of Fengtien Notes and combined with the Government's cornering of beans, the most important product, which latter course was adopted as a means of providing funds for military expenses on a more extensive scale, curtailed the business prospects of the Manchurian staple merchants on the one hand, and, on the other, wrought great evil to the purchasing power of both farmers and merchants, thus causing severe distress in the economic world.

Rebuilding China's Finances

Mr. T. V. Soong's Proposals to Establish a Modern Government for a Unified Country:
Business Men of China Support Him: Opposition by Military Endanger Salutory Program.

LITTLE that has occurred in China in recent years equals in historical importance to the National Economic Conference, which was called by Mr. T. V. Soong, Minister of Finance in Shanghai, during the last week of June. Fundamentally, the difficulties which face the foreigners in China are the same as those which the Chinese people have fruitlessly been seeking to surmount by military force. The Chinese have, most of the time, permitted themselves to believe that their more serious problem was the revision of their Treaties with the foreign Powers. This, however, is fundamentally false, because with any nation it is not the foreign relations which are of primary importance, but rather the social and economic condition of the people of the country. The physical basis of life in China is so undeveloped and the standard of living so low, that political action by the masses of the people is unthinkable because the people have not the economic means to permit themselves the leisure to become politically intelligent. In a word, before China can establish herself as a great Power, the life of the Chinese people has to be re-organized. At the opening session of the Economic Conference, Mr. Soong faced this problem candidly. He said:

"Up till now the Nationalist Government was in the Military stage of its existence, and almost its sole aim was to secure military success at any costs. For that reason its financial policy was likewise directed towards the single aim of securing enough funds for the front, without any undue disturbance to the rear. The Northern Campaign is now completed, happily without straining the rear to the breaking point.

"With the capture of Peking the government could now divest itself of the war psychology and devote its efforts towards reconstruction. The Ministry of Finance is attempting to perform its part in this great task, and is seeking the guidance and co-operation of prominent financiers, industrialists and economists, who have been summoned to this conference.

"There are five important problems, which I propose to submit to the particular sub-committees and later to the general conference, for discussion:—

A. Currency. Our currency system is chaotic in the extreme. How shall we bring about uniformity throughout the provinces, adopt a decimal system for subsidiary coinage, deal with the depreciated banknotes, and establish a sound national banking system?

B. National Indebtedness. Our national loans, domestic and foreign, although relatively small in proportion to our resources, are being badly managed. How shall we improve our credit so that we could, like any other country, go on the money markets

of the world with confidence, to raise funds for rehabilitation purposes.

C. Taxation. Owing to many reasons, not the least of which is foreign complications, our system is unscientific and uneconomic. How shall we simplify our taxes so that revenue could be improved without undue burden to the taxpayers?

D. Commerce. The revival of commerce primarily should be a question for the consideration of the Ministry of Commerce and Labor and the Ministry of Communications. But there are many associated problems which this conference might with advantage discuss with the representatives of these Ministries, who are present with us.

E. National Expenditure.

The completion of the War sees a chance for shifting expenditure in great measures from wasteful to productive enterprises, and it is our duty to seize this opportunity to carry out the rehabilitation plans of our revered leader, Dr. Sun.

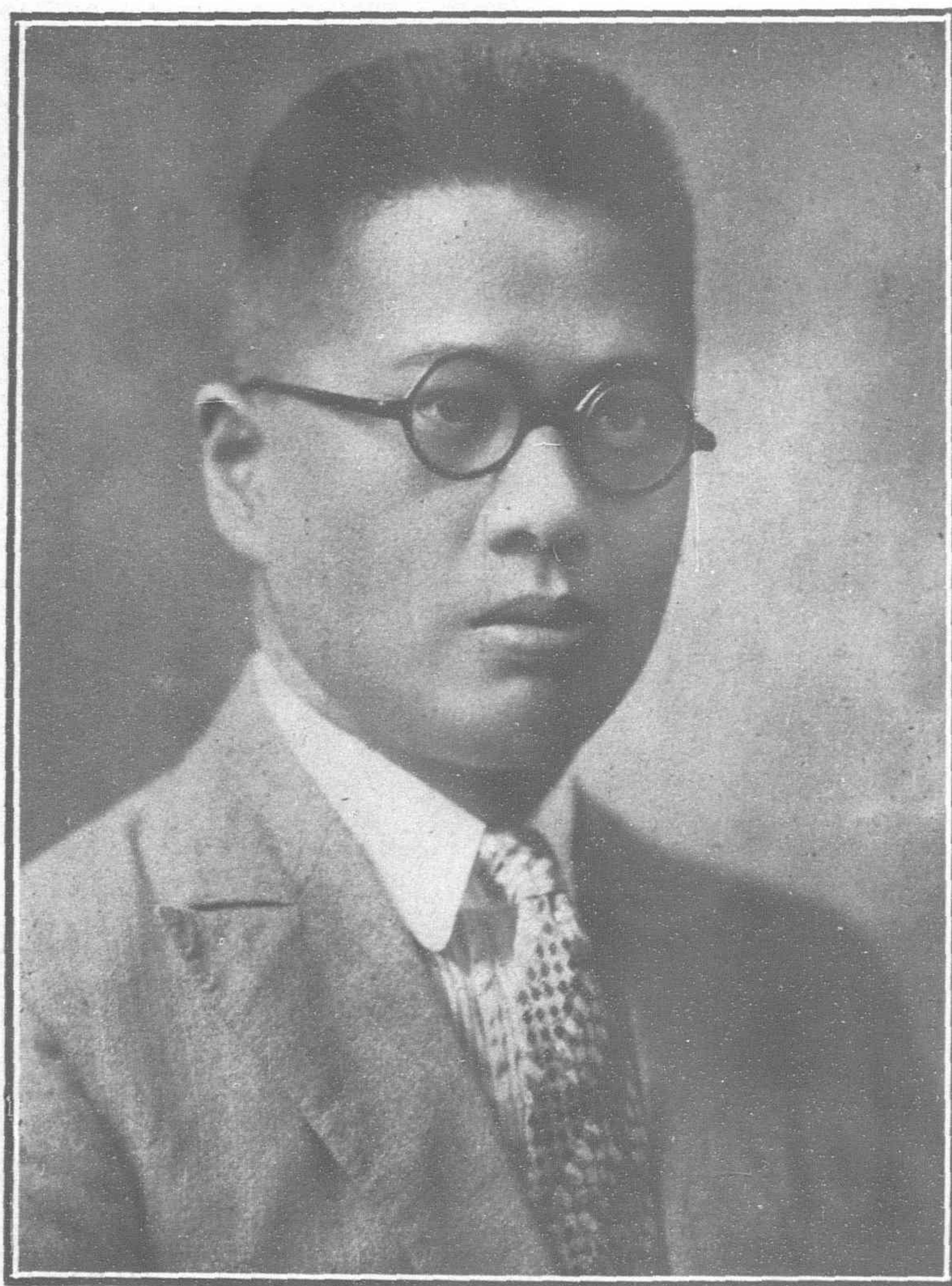
"There is a Western saying that 'in the long run every people gets whatever government it deserves.' That is also true of the economic and financial policies of any government, and particularly so today when our government seeks to ascertain the wishes of the community, and is willing to abide by them.

"In closing therefore may I express the hope that the Conference, and the various sub-committees, will, from this day, discuss the problems with the utmost concreteness, frankness, and in the light of national interest."

A Middle Class Conference

The National Economic Conference was different from similar meetings in China because those who were present were not politicians but bankers, merchants, industrialists and economists. They represented the wealth of the country; they represented what

might be termed the articulate element of the economic middle-class and from that standpoint they constitute what must be the foundation of any sound re-organization of the economic life of China. These businessmen were divided up into sub-committees, which rendered interesting and important reports at the Conference. One of the most interesting was that of Mr. Li Ming, Manager of the Chekiang Industrial Bank and Chairman of the Committee on National Indebtedness, who called attention to the fact that China's national indebtedness was comparatively small, the per capita amounting to not more than \$4 or \$5, as compared with Great Britain's \$165 per capita and France's \$52 per capita. The solution of China's problem as regards national indebtedness depends entirely upon the establishment of sound credit.



Mr. T. V. Soong, Minister of Finance

Mr. Li Ming, then, cited the examples of Great Britain and Germany, which had maintained a good credit by meeting their obligations bravely, while Soviet Russia repudiated her debts and lost her national credit.

He said that his Committee favored the recognition of all public debts as a principle, but suggested that there should be a different procedure in dealing with them because of the different nature of the several obligations. Altogether, he suggested that China's obligation could be grouped under five classifications.

But as a general principle, Mr. Li advocated the establishment of a Sinking Fund Board of Trustees for the amortization of all loans. His Committee proposed that this Board shall be similar to the 2½ per cent. Surtax Sinking Fund Board,* which has already successfully handled a number of loans of large amounts.

The Committee finally suggested that a medium shall be created, probably by the Sinking Fund Board of Trustees, to control the use of the funds from future loans so that these funds would be used solely for the purposes designated when the loans are made.

The following resolutions were introduced by Mr. Li Ming's Committee:—

The liquidation of the Secured domestic and foreign indebtedness;

The liquidation of the Unsecured domestic and foreign indebtedness;

And of the Provincial domestic and foreign indebtedness;

The liquidation of the indebtedness of the Ministry of Communications;

The repayment of the bonds and banknotes issued by the Canton and Hankow Governments;

Measures for raising a Rehabilitation Loan;

Organization of a Sinking Fund Board of Trustees of non-official civilians.

The Committee on National Indebtedness:—

All resolutions proposed by the Committee on National Indebtedness were passed by the Conference. A full translation of the resolutions could not be made in time for publication to-day but the following is an authorized summary:

1. The indebtedness of the Nationalist Government contracted in Hankow and Canton, consisting of Treasury Notes and Central Bank obligations shall be consolidated into a single loan to be met by the 2½ per cent. Surtax.

2. All secured loans, upon which interest and principal have been paid up to the present, shall be continued as heretofore.

3. All inadequately secured loans shall be dealt with by the following procedure:

The Government shall appoint a special commission to investigate the agreements with regard to such loans, to obtain accurate information with regard to principal and interest charges. These loans shall then be consolidated into a single issue secured on the additional tariff revenue. This implies an increase in the tariff rate.

4. All provincial loans shall be consolidated into a single issue by each province, which shall be instructed by the Central Government to provide adequate security for the amortization of the loan.

5. All loans secured on railways, and railway receipts shall be paid by the Ministry of Communications. But in view of the unfortunate conditions of the railways arising from the years of civil warfare, the Ministry of Finance shall create a Rehabilitation Fund, for the purpose of purchases of new requirements with regard to the permanent way, rolling stock and other equipment to make it possible for the railways to resume full commercial operation, so that the revenues shall provide funds for the liquidation of the indebtedness.

Part of a rehabilitation loan issue to be raised shall be used for this purpose if other funds prove inadequate. This plan is discussed elsewhere in this summary.

The expenditure is to be controlled by a committee consisting of bankers and merchants elected by their own bodies.

6. A public Sinking Fund Board of Trustees is to be appointed for the purpose of protecting the funds so that amortization of the loans and interest payments shall be fully guaranteed. This Board is to be elected by public bodies of merchants and bankers underwriting the loan.

7. The plan, to which reference has already been made, for a rehabilitation loan, is as follows:

A sum of \$300,000,000 shall be raised for the purpose of disbanding soldiers and providing them with productive employment,

reconstructing the railways, river conservancy and port development, and, if there is a surplus, popular education.

This fund will be handled by the public Sinking Fund Board of Trustees who will control expenditure.

A. Tariff Protection.—That the Government should attempt within the shortest possible time to recover our National Tariff Autonomy so as to protect the country's trade and other commercial interests, at the same time abolishing all injurious internal levies so as to promote native trade and industry.

B. Currency Reform. That the Government should immediately devise methods for reforming our national system of currency so as to stabilize the money market and to facilitate our commercial progress.

C. Facilitation of Transportation. That the following instructions concerning the administration of the Government Railways be issued to all Governmental Authorities, especially the Military, so that normal operation of the Railways, will not be subject to frequent interference:

1. That all military authorities be instructed to refrain from interfering with the administration of the Railways.
2. That all cars and rolling-stock be returned to the Railway Administration.
3. That only duly authorized Military authorities be allowed to negotiate with the Railway Administration for transportation facilities in time of need.
4. That all Railways be maintained in good order and high efficiency.

D. Protection of Property of the Business Class. That all private-owned properties, such as ships, flour-mills, factories, and mines, which are now being occupied by the Government authorities, be immediately returned; all properties improperly confiscated being likewise returned to their owners.

E. Adjustment of Disputes between Capital and Labor. That the Government should enact Labor Laws governing the organization of labor unions so that trouble-makers can be prevented from utilizing such organizations for fomenting troubles; that the expenses for such unions be made public and placed under supervision, and that, during the period of illegal strikes, employers shall not be responsible for the pay of the strikers.

F. Protection and Promotion of Native Products. That the Government give protection to all home industries by exempting them from taxation and by according them special transportation rates on the Railways.

The Committee on National Expenditure introduced the following resolutions on the disbandment of troops, which were unanimously passed:

(1) The size of the National Army to be retained should be limited to fifty divisions, of 10,000 men each.

(2) The distribution of the fifty divisions should be determined according to the need for defense and suppression of brigandage in different parts of the country.

(3) The annual military expenditure should be limited to \$192,000,000—\$120,000,000 for the Army and \$72,000,000 for the Navy, Air Force, Arsenal, Military Education, Military Administrative organs, etc., under the jurisdiction of the Military Council.

(4) The Government should establish a Soldier-Labor Reconstruction Commission to take charge of the disbanded soldiers who are to be employed for various reconstruction purposes.

(5) Both the National and the Provincial Governments should devote 10% of its administrative expenses towards constructive work, the Central Government to raise a loan as a sinking fund for reconstruction purposes.

(6) Disbandment of troops should be effected within three months from the adoption of the measure by the Government.

It is interesting to note that shortly after this report was made, General Ho Ying-ching, Chief of Staff of the Nationalist army, made a statement to the effect that there were more than two million troops in China and that they were consuming \$800,000,000 a year of the national revenue. The question of disbandment of troops aroused the greatest enthusiasm at the Conference and at the final session, a Preparatory Committee to organize the Association to Promote the Disbandment of Troops was formed which

*A Sinking Fund Board of trustees has been called into existence with regard to several loans already made by the Nationalist Ministry of Finance. This Board controls the amortization of \$86,000,000 of bond issues of the Nationalist Government. These bond issues have never fallen below 93, which is an exceedingly high quotation for Chinese bonds during the present period of trouble.

consisted of Yu Ya-ching (Chairman), Chin Yun-tsin (Shanghai Fu Yuan Exchange Bank), Pan Hsu-lun (Chartered Accountant,) Feng Shao-shan (General Chamber of Commerce), Chang Kung-chuan (Bank of China), Li Ming (Chekiang Industrial Bank), Lin Kang-hou (General Chamber of Commerce), Y. H. Moh (Cotton Exchange), Loh Peh-hung (Chung Hwa Press), Chow Hsin-tang (Hankow Chamber of Commerce) and Chen Shu-tsing.

At this session, Mr. Soong again addressed the members as follows:

"During the ten days of your Conference you have laid down most important principles for the economic rehabilitation of the country. You have discussed ways and means for the disbandment of the surplus troops, limitation of military expenditure, creation of a strong central bank, unification of national currency, strengthening of national credit, regulations of bank-note issue, abolition of likin, and many other matters almost too numerous to mention. In no uncertain terms you have to-day also sent a circular telegram to the country urging the unification of national finance. These, gentlemen, are achievements you may well be proud of.

"There may be a feeling that as almost every one of the resolutions you have passed is of such far-reaching importance, it is too much to hope that you could have come to sound conclusions during these ten brief days. This reminds us of the story of an eminent surgeon who once charged a wealthy man a huge sum for the removal of his appendix. The patient protested at having to pay such a high fee for an operation which only lasted a few minutes. 'You are mistaken, my friend,' retorted the surgeon, 'you only know that the operation lasted a few minutes, but you do not realize that in order to perform the operation in a few minutes I have had to forego tobacco for twenty years.' Your Conference indeed lasted only ten days, but you bankers and business men have been experiencing years and years of misery from the misrule of militarists and politicians and the bondage of unequal treaties. Your resolutions are, indeed, not the work of ten days but decades of hard lessons and bitter experiences.

"The calling of the People's Conference, ordered by the Will of our late Leader, Dr. Sun Yat-sen, is an event which the Government wishes to carry out as soon as possible, but one must realize the difficulty of convening a really representative conference of the people in a short while. Therefore, until the Conference could

be convened, the Government is anxious to consult popular wishes whenever they could be clearly expressed. You gentlemen represent the propertied class, the wealth of the nation, but your decisions have been throughout marked by the broad consideration of national interests rather than by sectional or class interest. Therefore, in accepting your recommendations and resolutions, I, representing the Government, desire to state with earnestness that your wishes will be given the utmost consideration and further consulted when possible.

"Lastly, I must state that whether your proposals remain 'castles in the air' or be carried into execution is a responsibility devolving largely upon yourselves. Through the Standing Committee you elected this morning, this Conference will, after its formal closing, be enabled to advise the Government in putting into practical effect the measures you have put forward. The Ministry of Finance will loyally support your views, and if you will only realize that 'eternal vigilance is the price of liberty,' our Conference will produce startling results for our country."

Never has any Conference in China invoked so much enthusiasm among the responsible business elements of the country. A Conference of officials connected with national and provincial finances was called at Nanking immediately after the National Economic Conference and this official Conference fully endorsed the resolutions adopted at Shanghai and further drew up a practical scheme for carrying them into effect, and the question is now before the Nationalist Government. If they go through with this proposition, then there is hope for the economic re-building of China; if they fail, the Chinese people and the foreign Powers will find that the one complete plan drawn up by the businessmen of China and backed by their money, was rejected by the militarists for selfish reasons, and the rejection of this plan will delay the revision of Treaties, because those features of the Treaties which are objectionable to the Chinese are retained only because business cannot be done in this country under the present conditions. The National Economic Conference affords a complete program for modernizing China. It is doubtful whether the militarists of China will immediately grasp the significance of this event, but a charter has been laid down which undoubtedly will provide the means for eventual action.

We are indebted to the *Kuo Min News Agency* for the reports quoted in this article.

The Economic Salvation of China

By Y. F. Tseng, M.Sc.

(Continued from June).

SECTION IV. MASS EDUCATIONAL MISSION

THE fundamental step towards enlightening a conservative and superstitious people lies on compulsory education. The population of China has now reached 480,000,000. Assume 10% of the population to be children who are of school age, the total number of children for whom primary education is to be provided, will be 48,000,000. According to American statistics, the number of teachers to be employed should be 1,400,000 and the total number of schools provided should be 520,000. At present there are only some 110,000 primary schools in the country. Taking all the educational institutions whether governmental or private together, only 10,000,000 students can be accommodated or 1/5 of the total number of children of school age.

The ratio of the number of children who are receiving primary education in the primary schools to the whole population is about 20 in every thousand in China, while in America the ratio is 216, in Japan 153 and in Great Britain 144. To carry out compulsory education, the expenses on the primary education should be increased by \$220,000,000. In the present state of our finance, this is absolutely impossible. Granting that it may be possible to increase the primary educational expenses, the children might not be able to be spared by their parents from their families in view of the poverty-stricken condition of the people.

Our illiterates form 80% of the whole population, i.e. 380,000,000. With such a large percentage of illiterates, it would be impossible to uproot the inveterate superstition and to interest them

in the state affairs and enhance their productive power. They are easy victims to threats and inducements of wicked influences. The present state of affairs in this country is mainly attributable to the illiteracy of the people. In countries where education flourishes, there are also social institutions, subsidiary to the education institutions which contribute much to enlighten the people. They may be classified according to their nature as follows:

PHYSICAL ACTIVE:—

1. Physical
2. Athletic Meets
3. Public Bathing Ground
4. Public Garden
5. Public Recreation Ground
6. Public Resting Place.

PHYSICAL QUIET:—

1. Public Hygiene Association
2. Hospital
3. Labourers Home
4. Colonization in Summer
5. Charity Home
6. Food Distribution House

MORAL:—

1. Church
2. Educational Association
3. Young Men's Association

4. Young Women's Association
5. Penitentiary
6. Art Hall and Art Exhibition
7. Memorial Hall
8. Story-telling Hall
9. Music Hall
10. Literary Society
11. Lantern Slide and Moving Picture

INTELLECTUAL :—

1. Subsidiary School
2. Correspondence Schools
3. Silvan Schools
4. Vocational Education
5. Street Education
6. Library
7. Travelling Library
8. Printing Society
9. Newspaper and Magazine
10. Lecturing Society
11. Story-telling
12. Museum
13. Zoological and Botanical Gardens
14. Exhibitions

Such institutions in our country are by no means well provided. The success of popular education and social education depend entirely on the financial condition of the society. If our work does not commence with the development of communication as has been dealt with in the previous paragraph, then popular and social education can never be carried into effect, a democratic government can never be realized and periodical disturbances can never be terminated. Under present circumstance, the most practical way to disseminate popular education would be to launch a campaign for mass education following the example of the "Edict-teller" in the Ching Dynasty. The headquarter of Mass Educational Mission may be established in the Capital, with sub-headquarters in the provincial capitals and busy towns and cities from which it may radiate eventually to the villages and out-of-the-way places.

Subjects to be taught by the Mission may be as follows :

Elementary knowledge of a citizen. Dispelling of Superstition. Rudimentary knowledge of hygiene. Improvement of Agriculture, Industry and Commerce as well as rudimentary knowledge of increment of productivity of their respective occupation. Prevention of Plague, locusts, draught and flood. Manual education. "1,000 Characters" Movement. Elementary knowledge of house-keeping. Living, obligations and rights of farmers and laborers in European countries and America. State and World Politics.

The means and ways to be used by the Mass Educational Mission are :

Lecture, Story-telling, Stereoscope, Cinematograph, Small Publication and Hand Book, Pamphlets and Catechism.

The Mission should devote their activity to farmers, laborers and merchants as well as women. The Mission may be organized in the following way :

Investigation Department, Compiling and Editing Department, Correspondence Department, Lecturing Department, and Department of Communications.

Mass Education may be carried out directly or indirectly, *i.e.* education is either handled by the Mission or through other public societies such as Missionary, Y.M.C.A. School library, theater on subsidiary plan.

The posts of members of the Mission should be permanent and should be held by persons who possesses at least the qualifications of a graduate of a Middle School. Those who render their services satisfactorily, may be sent abroad for investigation and lecturing, whereby the national status of China may be raised and whereby new learning may be acquired. After serving one or two years abroad they may be recalled to work in the Mission again in the country so that they may disseminate the new learning acquired by them abroad.

Estimate of Expenses : Let the number of members of the Mission in each province be 100 and the staff in the Headquarters be 100, the total number of staff for the whole country will be 2,300 or thereabouts. The total amount of expenses on salary and other expenses will be about \$3,000,000 per annum. If this amount is

shared by all the provinces, the share of each province will be very insignificant. This is only the first stage. When it is proved successful in future, the annual expenditure may be increased to \$30,000,000. Is there any other cheap and quick way whereby the foundation of the Republic can be laid ?

SECTION V. ORGANIZATION (SECURITY OF POSITION)

It cannot be denied that there is some system of organization for every branch of the government in the Republic. Nevertheless it only exists in name. The reason for it may be illustrated by the old saying that there must be the right man to administer any system existent. For any organization there are lots of regulations and systems in ancient and modern times, in China and foreign countries, which can be adopted to suit particular conditions by careful digestion. But let us enquire how many systems and regulations adopted for any service have ever been put into actual operation. The reason is that the administrators of the systems and regulations are also the very destructors of the same.

Having been in the Salt service for a number of years, I am well acquainted with the inveterate vices of the Salt service. The malpractices are almost invariably invented by the Salt Officers. Not only are such men useless to the Government but they give their days and nights to evil doings. What they apprehend is the outgrowth of any good to the government and the eradication of any evil. This may be said to include every Government service of the country. However men are not born wicked. That they should commit peculation is to be attributed to the non-provision of security of position and inadequacy of remuneration. Anxiety for their fare and garb and fear of losing their position lead them to devise ways and means for personal aggrandisement. At first they do it occasionally and eventually they become habituated to crime. Finally malpractice forms their second nature. In the Ching régime, it was so but in the Republic it has become worse.

The above observations can not be confined to the civil service. They can in some degree apply to our large industrial enterprises. To formulate perfect regulations and systems for any political and productive organ requires careful study of the existing conditions but this does not mean that it is organized. In order that any service may be systematically organized, we must go to the root of the evil of our officialdom and have, first, the promulgation and operation of the laws giving protection of security to employer and employee. The laws should aim at affording security of positions to all classes of professionals. Except on substantiated charges of malpractice or proved incompetency or retrenchment of the establishment by the employer, no man should be discharged without proved justifiable grounds. The aggrieved should be able to submit his complaint to the law courts to claim for compensation.

The laws for the protection of employers should at the same time be promulgated. In case of substantiated charges of malpractice supported by evidence, the employer should be able to sue at the law courts to claim for compensation of loss sustained in his business. Though there is yet no country in which laws of such a nature has been put into operation ; * but in countries where malpractice is rampant, if there is no special laws, the civil and other service can never be systematically organized and industrialism and political reform remain empty talk. If the protection law is put into operation, the positions of manual and mental-workers as well as the employers would be adequately protected by the laws. It will form an important weapon to remove the prevalent malpractice and the provision of security of their position will induce the employee to consider any peculation as not worth while. If a man has a monthly income of a \$100, with a provision of security of position, he will consider himself as possessing of a wealth of \$10,000. If a man has a monthly income of \$1,000, with a provision of security of position, he will consider himself as possessing \$100,000. Surely such a man will not forfeit his \$10,000 or \$100,000 for \$1,000 or for a few tens of thousand dollars, with the prospect of legal penalties and losing his position. Then the organization of the various services can be perfected and every worker can be expected to exert his utmost for his employer. In case it were so, not only will the source of corruption be wiped out but the civil service be systematically organized, but the productive and purchasing power of the people will be greatly enhanced.

* Such laws exist in all Western Countries. The criminal laws protect the employer against theft—Ed.

SECTION VI. NATIONAL RECEIPTS AND EXPENDITURE

In the following, remarks are made on some items of our receipts and expenditures in order to give light to the future prospect of our National Finance. The budget on our national receipts and expenditure for the year 1920 to 1921 is \$490,000,000 odd, details of which are shown below:

BUDGETARY REVENUES

(\$1,000.00)

Kind of Receipts	Ordinary	Extraordinary
Land Tax	86,845	3,703
Customs Revenue	93,268	695
Salt Revenue	98,815	—
Commodities Tax includ- ing Likin	39,224	26,000
Ordinary and Miscellaneous Tax	59,182	3,911
”	4,332	—
Returns from Government Investments	2,411	31
Collections by the Provinces	5,579	293
Receipts of the Central Government	3,105	3,519
Direct Receipts of Central Government	47,072	17,451 (Railway)
Loans	—	50,948
Total:	409,838	80,881

Grand Total: 490,719

EXPENDITURE

(\$1,000)

Kind of Expenditure	Ordinary	Extraordinary
Ministry of Foreign Affairs	4,807	1,168
Ministry of Interior	43,279	4,891
Ministry of Finance	39,154	136,112 (Including Ser- vice Loan)
Ministry of War	129,588	78,243
Ministry of Navy	9,194	185
Ministry of Justice	10,323	6
Ministry of Education	6,088	461
Ministry of Agriculture and Commerce	3,257	442
Ministry of Communications	1,865	163
Bureau of Mongolian and Tibetan Affairs	1,318	50
Central Government	22,441	2,748
Total:	271,289	224,413

Grand Total: \$495,702

But according to the estimate for the year 1926, the total budgetary revenues amount to \$644,400,000 while the budgetary expenditure amounts to \$668,000,000.

In 1926 our Public Debt was estimated at \$2,386,000,000 odd. Following is a comparative table of receipts, expenditure and public debt of various countries:

Name of Country	Total Annual Receipts in million	Total Annual Expenditure in million	Total Public debt in million	Public debt per capita
U. S. A.	7,672	7,010	2,390	\$ 24
Great Britain	8,036	8,034	11,344	264
France	2,442	2,432	15,105	384
Japan	1,722	1,722	2,506	46
Germany	4,350	4,350	8,102	389
China	644	668	2,386	5

From the above table it may be seen that the burden on the Chinese people is comparatively light as compared with the nationals of other countries.

It must, however, be borne in mind that the productive power of our people as well as our capita wealth is also the lowest. This comparison only shows that under a stable Government, there will have no difficulty to raise necessary expenses for constructive work. Let us draw a comparison, not between those countries whose territory is as great as ours, but between Japan or France whose territory is by far smaller than China. In the latter two countries, the budgetary revenues are 3 to 4 fold of ours. Discarding oppressive regulations, abolishing excessive and obnoxious taxes in place of some reasonable and beneficial taxation can only be effected by men versed in the management of financial affairs.

Chinese officials in charge of collection are the worst of their kind in the world, their greediness being insatiable and they being ever disposed to ruin the public and the private interests.

Let us take the *land tax* alone for an instance. In 1920 the collection of land tax amounted to only \$90,000,000. Now the whole area excluding Mongolia and Tibet measures 7,055,800 square kilometer. Calculated at 1,627 Mow * per square kilometer, our territory covers 11,479,000,000 mow. Suppose that the cultivated land consists of 10% of the whole area, there will be 1,148,000,000 Mow of taxable land. Calculating at \$0.30 per mow per annum, the annual amount of land tax collectible will be \$344,000,000, which is four times of the present figure.

Let us consider the effect of *likin* abolition. The investigation of the Customs Conference of 1925 reveals that the total *likin* collection per year amounts to \$70,000,000. Let us assume that the tariff after the abolition of *likin* be increased from 5% ad valorem to 12½% on import and to 7½% on export, the yearly increase of the customs collection, if the figures of 1924 be taken as a basis of calculation, will be \$96,000,000. After the abolition of *likin* not only the collection will be increased, but it will also enable the various kinds of industry and trade to develop after removal of numerous barriers of *likin*.

Take again the *Salt Revenue* for instance. According to the present number of population of China, the salt consumed may be estimated at 48,000,000 piculs. Calculating according to the uniform rate of \$3.00 per picul, the annual collection should be some \$140,000,000.

The percentage of *military expenses* to the total expenditure of the various countries is: Germany, 7%; Great Britain, 14%; U.S.A. 19%; Japan, 17%. In 1920 our military expenditure was 50% of the total annual expenditure. In recent years the military expenditure may be raised even to 75%† Calculating at 30,000 soldiers for each of the 22 provinces and allowing 660,000 soldiers as the maximum number of soldiers to be maintained, the annual expenditure should not be over \$130,000,000.

* Mow—3/5 of an Acre (?)

† During the recent fighting, 85 per cent. of Nationalist revenue was expended for military purposes—Ed.

“A Condition, Not A Theory”

By Charles James Fox* in the “North China Star”



ANY years ago when theory and concrete facts were engaged in a political battle, in American politics, and where theory, as is usual in practical commonsense America, came out second best, President Cleveland seized up the situation in a remark that at once became famous: “It’s a condition, not a theory, that confronts us.” This remark comes spontaneously to mind when one reads, with Admiral Bristol on the theory end of the argument, the United

Press despatch from Tokyo, by Miles W. Vaughn, on the possibility of the American Marines being taken out of China in the near future.

Mr. Vaughn, in our opinion, is one of the ablest newspaper correspondents in the Far East, and he has sent out from Tokyo an accurate account of Admiral Bristol’s opinion on the situation in Tientsin and North China generally, as it was known here several

*Dr. Charles James Fox is generally regarded as pro-Chinese.

weeks ago. For reasons more or less obvious little or no publicity was given to the Admiral's opinions on this subject here, but now that the story is being carried around the world in the United Press service we see no reason for not publishing it.

Admiral Bristol is undoubtedly an able man. Even others admit it. In the Navy and in Turkey he "has deserved well of his country," as the French say in paying a high tribute to a public official. But he is not that kind of a mental genius who, however hard he tries, can come to China with a really open mind. On the other hand he is neither conceited, nor mentally stubborn enough, not to learn and revise his opinions, however reluctantly, after he has come into close contact with conditions in China. He was quick to spot and swat the foreign treaty-port die-hard, in Shanghai and elsewhere. It is perhaps but natural that he should have gone to the opposite extreme, at least for a time. There is no doubt that Mr. Vaughn's despatch accurately describes Admiral Bristol's opinions, even on his recent visit to Tokyo, just before he came here.

When the Admiral arrived here one of his first orders was that all the wives of Marine Officers should be put aboard the Chaumont as a first step in the immediate evacuation of the Marines. This order was cancelled, and as the Admiral is in supreme command as far as the Navy and Marines are concerned, it was of course cancelled by himself, after listening to advice of those who have been on the spot far longer than he has.

"Let 'em go, we'll defend the Concessions!" was the answer of our good old reliable Fifteenth Infantry when they heard that the Marines were about "to pull out." But Americans, other foreigners, and many, many Chinese were glad that both the Fifteenth Infantry, with their knowledge of and experience in China,

and the Marines, with their tanks, field pieces and airplanes, are both here to assist the other foreigners, as well as the Chinese police and troops who are ready to defend Tientsin in case of emergency. All the foreign troops and the Chinese are on most friendly terms, and the laudable ambition of General Butler and his Marines finally to leave China without ever firing a shot will in all probability be realized.

But the presence of foreign troops, under present conditions, is necessary, however objectionable their presence on the soil of a foreign friendly state may be in theory. Admiral Butler appears to have been convinced, both by what he has seen and by what he has been told by American officials and others, both in Tientsin and Peking. The Admiral, as he says, is in supreme command of the Navy, but he, like all other American officers, naval, military or civil, are public servants, and they have to take orders from above, just as they issue them to those below. The Admiral may recommend, but it is the Government at Washington which decides whether the Marines or other troops remain here or not.

Sentiment is a powerful factor in American public life and especially in foreign affairs. American public sentiment is strongly opposed to keeping American troops in China or in any other foreign land. But the self-same sentiment would kill any move that might place Americans in the light of "quitters" while the danger lasts. When the danger is really over the American troops, Marines and others, may be the first to go. But in our opinion they will never "quit." "The flag stays put" is the sentiment of most Americans. In determining when the danger is over Admiral Bristol should recall President Cleveland's, "It's a condition, not a theory, that confronts us."

Shall the Masses of the Chinese People Continue to Suffer?

Will Rich and Orderly Countries Ignore the Chaos and Misery of China?

Famine in Shantung Nearing Bitter End

By Hallett Abend, Special Correspondent of the "New York Times"

Peking, April 12.—Though famine conditions in Shantung and in Southern Chihli Province will end within six weeks when the first of the Winter wheat is ready for harvest, conditions to-day are even more deplorable than they were during the Winter months, and as grain reserves are being gradually but steadily depleted more and more tens of thousands of persons are living on famine rations or actually starving to death.

To-day, it is estimated by famine relief workers, at least 4,000,000 people are living upon one meal a day of chaff or cotton seed pulp. The chaff consists of the hulls of millet seeds. Cotton seed pulp is the residue of cotton seed from which all the oil has been extracted under pressure. There is very little nourishment in a stomach full of either of these food substitutes and continued diet of this kind is either fatal or causes serious and lasting diseases. In ordinary years the chaff is used for wine making, and the cotton seed pulp for fertilizer.

In the country districts around Tsinanfu, Tamingfu and Tsiningchow lands, houses and furniture are unsalable at any price. Comely women and young girls are the only "commodities," other than food, which can find cash purchasers in these regions, and prices range as high as \$100 for young girls pretty enough to be resold to sing-song houses in the large cities. In many villages the wealthy dealers in human flesh have been mobbed and murdered by the famished and enraged villagers, who have later divided the money found upon the men they killed.

In hundreds of villages of from 100 to 500 families, from two to ten funerals take place daily, and in literally scores of villages the survivors are too weak from famine to dig the graves to a proper depth. Rains wash the soil from the shallow graves and a general pestilence is feared.

The desperation of the villagers and peasants has become so great that crimes of violence are now so common as to excite little

comment. Only in the cities is any pretense made of punishing theft or even murder. In nearly every village men will be pointed out who have killed the heads of families suspected of hoarding grain or of having money concealed in their homes.

Then horror is blended with pity at tales of strong sons who have strangled their aged parents in order to keep them from the pangs of starvation—strangled their parents and then started afoot on the 1,000-mile journey to the free lands of Manchuria. Infanticide, never uncommon in China, is now generally practiced in the famine districts by parents who can barely keep themselves alive, or who cannot endure to see their children dying of slow starvation.

The exodus from Shantung and Southern Chihli is being accelerated from day to day. Chinese and foreign famine relief workers now estimate that by the end of this year famine and emigration will have reduced Shantung's population from the 34,000,000 of 1926 to about 25,000,000.

Care of Engines in China

From "Railway Journal"

In a copyrighted dispatch to the "New York Times," Hallett Abend writes of his experiences on a train in China, from Peking to Tsinanfu, about 150 miles, in which he relates the following about the locomotives in that revolution-ridden republic:

I had heard from foreign railway men of the Chinese practice of running locomotives without repairs until they simply refused to turn a wheel. It was no surprise, then, to find our own engine leaking steam at every joint.

Nine-thirty o'clock came and passed; then 10 o'clock. I rang for the porter, who told me that because of "very bad engine" we might be "four-five hour late." Thus we crawled southward. We were four hours late. We were five hours late, then six, then seven. At last, at 5 o'clock in the morning, just seven and one-half hours late on a twelve-hour run, we wheezed into Tsinanfu.

Later in the day I visited what is known in Tsinanfu as "the graveyard of engines," and saw there more than half a hundred

costly locomotives, most of them of American make, which had become useless because of abuse. The boilers were caked, the crown-sheets burned out, the grates were burned out, the wheels were flat and the journals were burned out because of insufficient oiling.

South of Tsinanfu, between there and Pukow, nearly fifty locomotives may be seen in ditches beside the track. They were run until their wheels refused to turn, and then were blandly derailed and left to rust away.

"The Chinese Recorder," April, 1928.

Life on China's Border

R. A. Peterson

Our mission, known as the Tibetan Christian Mission, moved to Batang, Szechuan, from Tatsienlu in 1908, after the border had been put into more or less order under "The Grand Old Man of the Marches"—Jao Erh Fang. The money used in his projects of subjugation, colonization and education was originally raised for the Szechuan Railroad, of which there is now a monument in Chengtu, a tombstone, I suppose. Jao lost his head in the revolution. Our people left Batang to be gone for several years, returning in 1924. For the last thirteen years we have tried to hold on, sometimes with only two families and again with as many as seven and a half: just at present we are three and a half.

In 1911 two of our men made a trip to Chambdo, seventeen days to the north west of Batang, where they arrived in safety, notifying us by telegraph. To-day there is no telegraph office closer than Tatsienlu, though wire is to be found scattered about in hundreds of places, and pole stumps are seen along the roads, scarred with slashes from Tibetan knives. That is just a sample of how matters are going from bad to worse. Instead of Chinese Government scattered all over this border there are at present officials at Hokow, Litang and Batang as well as Tatsienlu. At least I know of no others. The power of the Chinese official in Batang is limited to its walls and a radius of less than a mile outside. No soldiers have been sent in here for five years. Recruiting must be carried on within the small decreasing population of the valley to make up for deaths. The Tibetans are constantly catching a few soldiers off to themselves and stealing their guns: the last raid meant the loss of forty guns for the Chinese. This cannot go on forever.

Why mention such matters? Simply because we know that if the Chinese are driven out of here we shall have to leave also. Without considering the international complexities of treaties as they concern foreigners and Tibet, it is enough to know the Tibetans themselves. Their nature itself is such as to preclude all possibilities of living and carrying on here after the Tibetans are in charge. This is not only my opinion but that of the oldest missionaries we have. Can we say, "All Tibetans are liars, all liars are robbers, therefore, all Tibetans are robbers?" It does seem to be true. It would be too much to attempt to list the robberies against foreigners for the last several years only. I should estimate my own loss at about \$1,000 since I arrived in Batang in May, 1924. Only the other day when I was ill, a Tibetan requested a mirror from my wife and upon being told to come back later he said that if we did not give him one he would come back later and steal what he wanted. Just to-day we found that some of the same crowd had lifted the hooks off the doors of the hospital! "Small things!" Yes! But a small leak will, in time, drain dry a large tank!

What is the effect of all this upon the church? First, after twenty years work, we still have a very small church only, composed mostly of Chinese or half-breeds and almost entirely of our servants and other employees. Decent Chinese will not stay here long. At present church life is at a very low ebb, so far as numbers are concerned, due to removals by death and otherwise and to general "ornriness" upon the part of the remainder. As a result of constant robberies, talk of wars, stiff military taxation to keep up the small force they have to feed, there is a pervading sense of despondency among the people. A "What's the use?" feeling, seems to kill the first sign of thrift or industry. The collections from natives amount to less than \$1.00 per month. Does that sound like self-support? "But," it might be said, "there is no incentive for them to give as there would be if they were self-supporting." But honest tithing upon the part of every church member would not pay the salaries of the two evangelists! Furthermore almost all the church members receive their pay from the mission, or individuals within the mission. Our most trusted man, the head evangelist says that

they, the native Christians, could not possibly hold on long if we left. Every mission institution would, in his estimation, be quickly disposed of; hospital, school, chapel and residences promptly sacked; and our seventy orphans stripped of the clothes they have on within a week! How under such circumstances could such a small band of *real* Christians hold together very long?

These are some of the problems that we thought of last May and June when the orders for evacuation began to come. We were advised not to take the road down the Yangtze. The local Chinese official had been holding us off for some time from even sending after some goods we had at Atuntze on the Yunnan road. Finally two families left to go out via Atuntze and through Burma and India. Just across the Szechuan-Yunnan border their escort, horsemen *et al*, joined with robbers to relieve them of everything they had but a small portion of their bedding, food and tents. They were then two days from any houses! Their privations from that time on are almost unbelievable, considering that there were five children in the party! They left here June 27, 1927. We have just heard of their safe arrival at Fort Hertz in the early part of September, where they were still twenty days' journey from the rail. We have had a report of three foreigners being killed or lost in trying to get out of Kansu. In view of all this we feel that it is much worse to try to leave than to stay.

On the other hand, there is the question of supplies and money. We have some money on hand and shall be able to get small amounts here unless everything goes wrong. We are trying to run everything connected with the mission on 500 rupees a month—about \$225 Mexican. This cannot go on forever! The hospital must have drugs and supplies! At present we have drugs at Yunnanfu with no chance at all of getting them to Batang. I have \$100 worth of sugar at Chungking bought and paid for in August, 1925! Our situation may be further complicated by the departure for furlough of those few missionaries who are still at Tatsienlu and Yachow. It is upon these that we must depend when buying money even here in Batang, as we must give them an order first upon Tatsienlu, which is cashed there by an order upon Yachow and that in turn by one on Chengtu or Kiating, etc! A Batang merchant has no idea what to do with a Shanghai check! So much for communications.

Last January in our annual meeting, we had for the first time in the history of our mission, some of the natives take part. Later when two families left the evangelistic work was turned over to two foreigners and two natives. The school is under a council composed of four foreigners and six natives. I, serving upon both of these, cannot say that I am thoroughly satisfied with the results. Not one of these natives has attended middle school and only two or three have completed the higher primary. Thus most of our work with them is educational, giving them an insight into mission problems. However, as they say at Chengtu, we are both, most probably, learning much.

I must, however, say a few words concerning the encouraging things which we see. When we had to cut working expenses we began to find out who are our real friends as distinguished from those whose interest depends upon finances merely. This has drawn us into a closer working fellowship with some of the natives. While the attendance upon the various services both in Tibetan and Chinese is small there is a spiritual note which is seldom missing. Yesterday, for example, there were present at the Chinese Communion service the two evangelists, the head medical assistant, the head orphanage assistant, the chapel keeper and a Chinese gardener who works orphanage land—all connected with the mission. All took part in a round of sentence prayers for the people of Batang, the mission and the Christians. They were all good prayers as far as my poor Chinese could ascertain and there was a distinct spiritual atmosphere in the meeting. At the Tibetan services four of us foreigners take turns with the two evangelists in preaching.

This is the condition of the only Christian Church within many miles. I might draw the line about us as it exists to-day for the information of those who may care something for the vast hinterland of China. Excluding the Catholic work, which is headed in the Bishopric at Tatsienlu with several stations on this Tibetan border, the status of the Protestant stations which lie around us is as follows:—Beginning with the Pentecostal Missionary Union work at Wei Hsi and Likang, where there are small native churches and from which the foreigners have evacuated, we pass to the Tali C.I.M. station, where there is a good church with the missionary, however, absent; then to Tsushong, four days from Yunnanfu

where Miss Morgan is still on the job. At Yunnanfu there are several missions and still several missionaries. Hweilichow near the Yunnan border in Szechuan is evacuated, leaving a small church,—this is the Australian Disciples' Mission (we belong to the Disciples' American Mission). Ningyuenfu has lately been left to the tender mercies of the natives themselves after many years work by American Baptists. They have a good work at Yachow now in charge of Mrs. Salquist and Mr. Jensen. At Tatsienlu Mr. Robert Cunningham of the C.I.M. is holding forth. But, as I understand it, there is now no regular organized church there. To the north is the work of the Christian Missionary Alliance in Kansu. It is reported that the missionaries have all evacuated; but of this I am not sure. The map gives no definite idea of this great country, in some parts thickly populated and in others very thinly, but there are many thousands of Chinese tribesmen and Tibetans within the territory designated. Should we leave these to the Chinese Home Missionary Society? They have already begun work within this territory at Lutong, three days west of Yunnanfu.

This is my resumé of the West, or shall I say extreme West. You call Chengtu "West" but it takes more than a month of travel for us to get to Chengtu. We feel unsettled, as I suppose all missionaries in China feel, or ought to, at any rate. The work is hard and discouraging but we know it is not in vain. It cannot be in vain when we do whatever comes to our hands to do in that Name Which is above all other Names, Jesus the Christ, the Son of the Living God.

Since writing the above we have pretty reliable information that there are fresh troops on their way here. That is good news! We have had a very satisfactory Christmas season. Things look better for 1928, but whether they look good or bad we intend to keep on at the work as long as possible.

"Los Angeles Cal. Times," May 11, 1928

Leashing the Dragon

How to "respect" that which continually proves itself unworthy of respect is a problem which concerns each of the nine nations whose governments affixed their signatures to the treaty on Chinese polices negotiated at the 1921-22 Disarmament Conference in Washington. The signatories voluntarily bound themselves to "respect the sovereignty, the independence, and the territorial and administrative integrity of China." But when "sovereignty" and "administrative integrity" become only empty phrases, how are they to be respected?

Through civil war, violence and anarchy China has come to be little more than a geographical conception. China is a house divided against itself. The Chinese are their own worst enemies. The present generation has shown itself apparently incapable of unified action, of majority action, of self-determination of governmental forms. China has fallen away into groups of hostile mobs whose members are armed with deadly weapons, who are no longer respecters of rights, laws, life or property.

For general government has been substituted general disorder. From the outside the appearance is that of a people bent on willful destruction. This condition has been slow in development, but in the present clash with Japan it has reached a crisis. The Japanese government is in no mood to permit its treaty rights to be flouted by these mobs, to permit its nationals to be murdered and their possessions to be plundered with impunity. Mobs that assume the name of governments do not cease to be mobs. Words are names of things and thoughts, not things and thoughts themselves. A name without a deed is no more valid than a deed without a name.

To violence Japan has opposed violence. It is the right of governments, of peoples. Punitive expeditions are now under way. Japan respected the treaty rights of China until they were flouted by the Chinese themselves. But Japanese troops have again occupied Shantung; that is a condition, not a theory. Let him run out from the riot who will; Japan has elected to run in.

This is no hasty gesture. The Japanese government is proceeding with cold determination. It was apparently prepared for just such a contingency. It was not caught unawares. Japanese ambassadores have called upon each of the governments that is pledged by the Treaty of Washington, have given the assurance that Japan is acting only for the protection of the rights and property of its nationals, that it is acting strictly under the terms of the nine-power treaty. But this action involves the occupation

of Chinese territory by divisions of armed troops, and of Chinese waters by a considerable part of the Japanese navy.

It is war without a declaration of war, again a condition and not a theory.

There may be signification on the fact that Japan's first gesture was toward the signatories of the Washington Treaty, not toward the League of Nations. To the Japanese, the League seems to be a secondary consideration.

Japan has inaugurated the "full and frank communication between the powers concerned," according to the letter of the treaty. But how are these communications going to bring about a cessation of hostilities? With whom are the signatory powers going to treat in China? To whom shall they direct their remonstrances? What authority exists in China that can be held responsible for defraying the expense of the Japanese occupation? How long is this occupation to continue? What assurance can be given that the rights of Japanese and other nationals in China will be respected, once the troops are withdrawn?

Japan is fully able to maintain its rights by force of arms. The Chinese are too divided against themselves to offer effective resistance long. Who is to say to Japan "So far and no farther?" There is deep portent in the words of former Secretary Hughes, "Where we are not in a position to compel, we do not demand."

How much of the "white man's burden is our own country to assume, and how far are we to carry the load? This is not a political, but a national and international question. Unless the fire kindled in Shantung is quickly extinguished it may become an international conflagration.

"Albany N. Y. Times Union," May 10, 1928

Events in Shantung are teaching useful lessons to awakening China in the dear but effective school of experience.

They are teaching cohesion, for one thing, and, for another, the imperative need of discipline.

Those who set armies in motion in the name of patriotism without power to hold their excited soldiery in check when proper orders are given cannot escape responsibility for resulting outrages by pleading good intentions.

Reports of what happened at Tsinan vary in many details, but agree that the Nationalist soldiery there, as at Nanking, got out of hand. Their orders were correct, but were not obeyed.

Any nation worth its salt will, to the extent of its ability, protect its nationals in a foreign land from mob onslaughts. Japan at Tsinan was able to do so effectively.

There is nothing in that action which calls for American interference.

"Boston Mass. Post," May 22, 1928

Uncle Sam Warns

Doubtless aroused by the slaying of two American missionaries, Dr. Walter F. Seymour, superintendent of the Presbyterian Board of Foreign Missions hospital at Tsining, and Mrs. William T. Hobart of the Methodist mission at Taian-fu, the United States government has sent a stern message to both sides in the present civil war in China, assuring the combatants that fullest reparation has to be made for the killings and warning them to take good care that Americans are not endangered by the promiscuous shooting of the fighters.

The despatch of the State Department to Minister MacMurray at Peking asks him to inform the rival forces that in view of the fact that many Americans reside in the war area "apprehension is felt for their safety. The United States has taken measures to assure the protection of its nationals and their concentration where protection is possible. Please instruct the Nationalist forces not to attempt to enter these areas, in order to avoid misunderstanding."

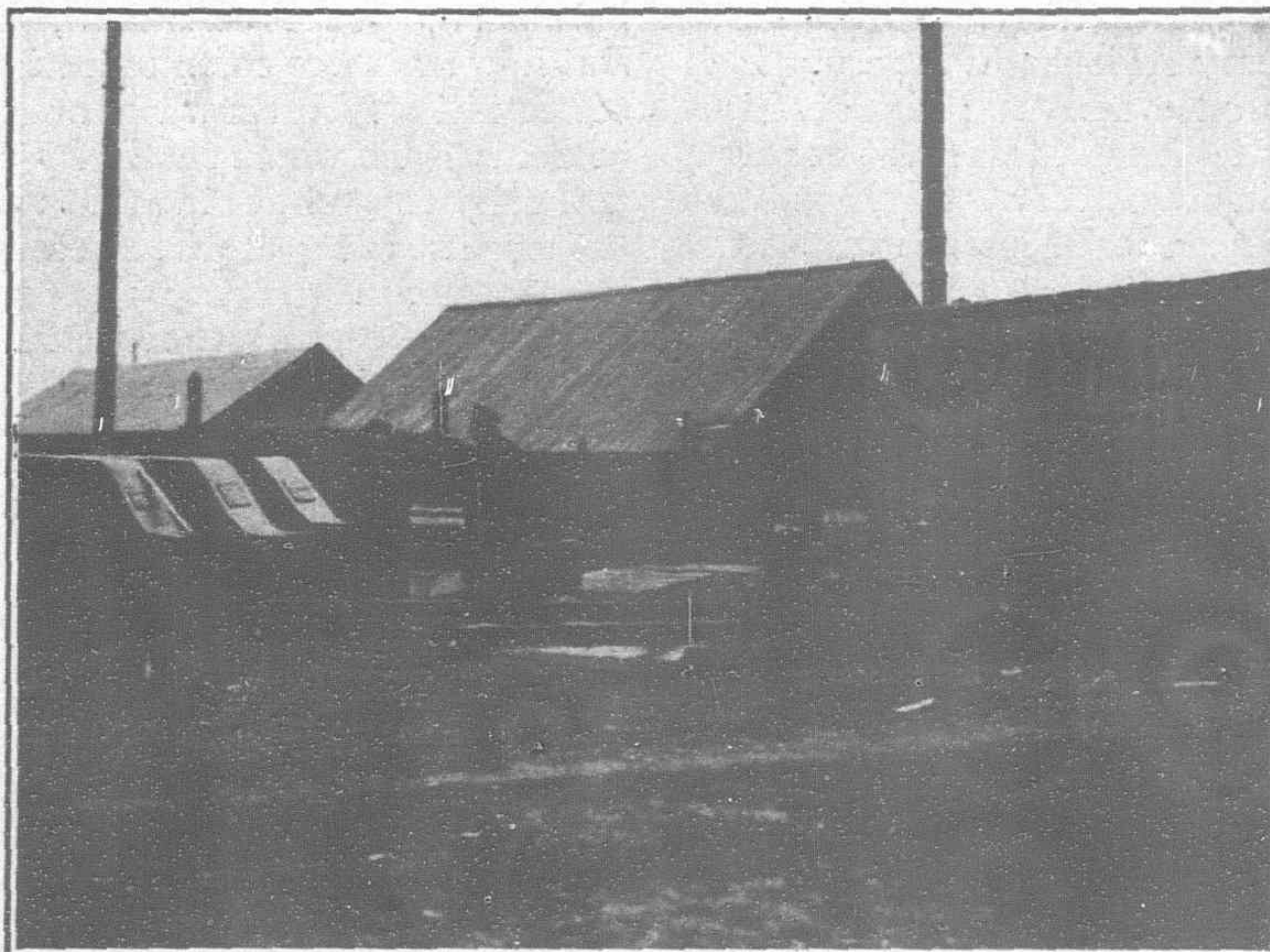
This is quite in keeping with the policy and the character of Uncle Sam. He does not propose to interfere in Chinese domestic affairs, but he does intend that his people living in concentration areas shall not be murdered by a lot of irresponsible soldiers. No government worth its salt could do anything less than that. And no virile American would want it to do less now.

We are not exposing our nationals, and then demanding that they be protected. We are putting them in zones where no fighting should be necessary and then warning the combatants that they will be harmed at the peril of either Chinese faction. That is proper and right.

A New Development in Mechanical Transport in Northern Manchuria

A HOLT Caterpillar Tractor "60 logging cruiser" manufactured by the Holt Caterpillar Tractor Company, and a train of three truss wheel logging wagons manufactured by the Athey Truss Wheel Company, were recently delivered to the Chinese-Eastern Railway by Andersen, Meyer & Co., Ltd., to operate on the Railway's timber concession approximately 300 kilometers from Harbin.

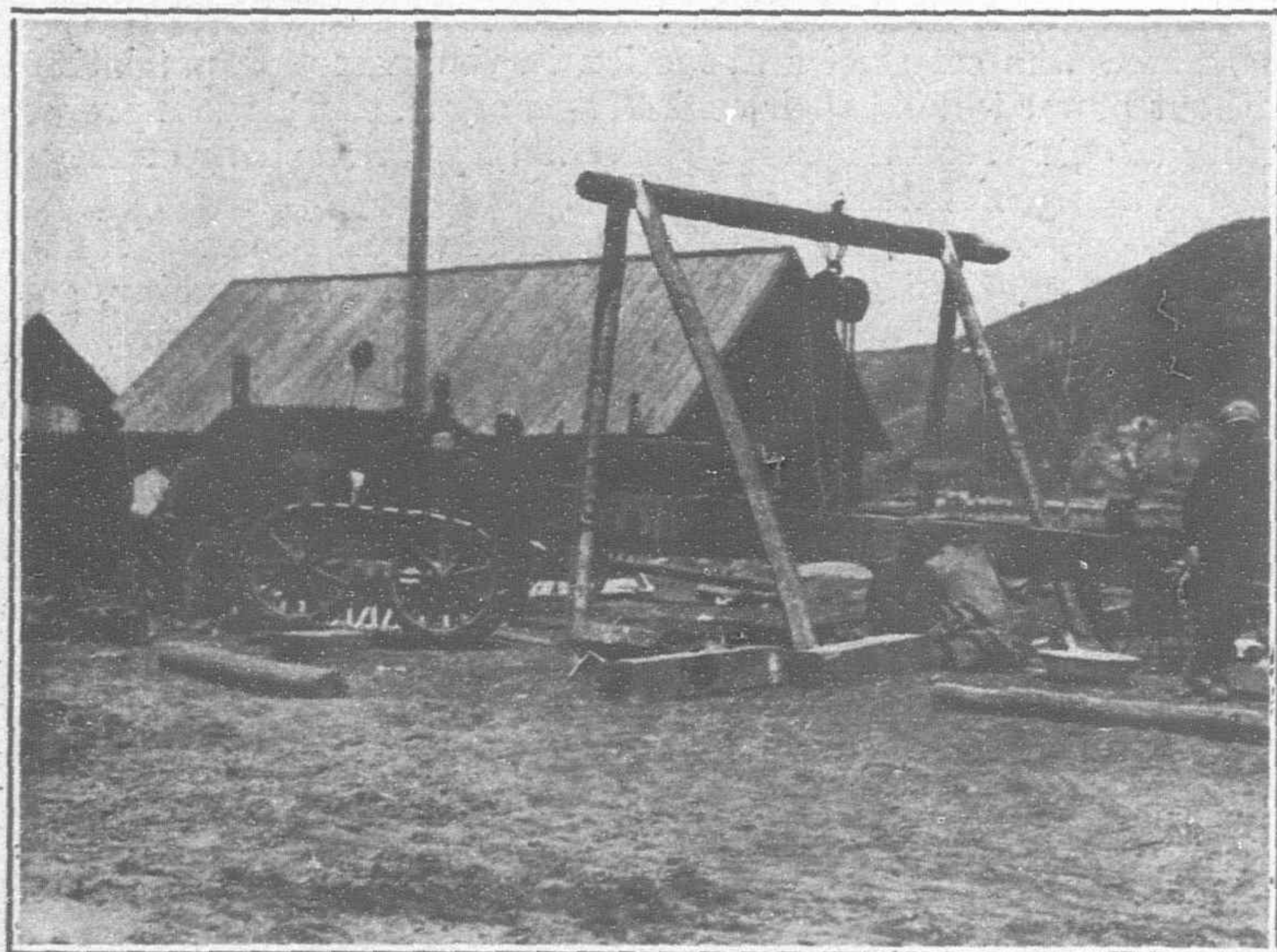
The concession, which comprises approximately 900,000 acres of forest, is situated in the region of Shihtou Hotze, a comparatively small town about 300 kilometers from Harbin on the Vladivostok line. From Li Ta Ho Tze the Forestry Division



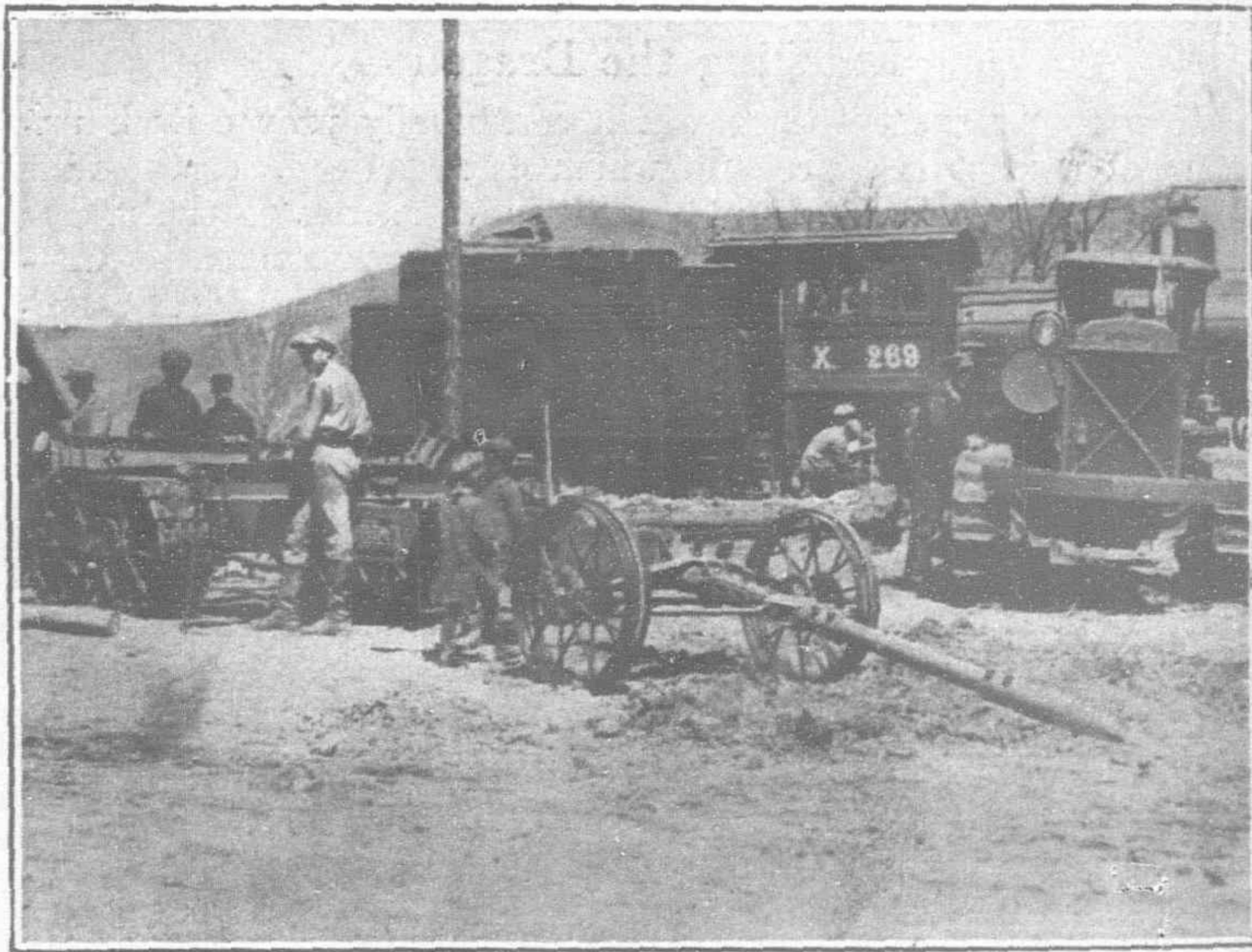
No. 1. Caterpillar and Athey Wheel Equipment as Delivered at Shihtou Hotze

of the Railway have constructed a branch line running for 35 kilometers into the forest and at the rail head of this branch line there is considerable building activity at present in connection with erecting quarters for office and logging crews in anticipation intensive operation during the next several years.

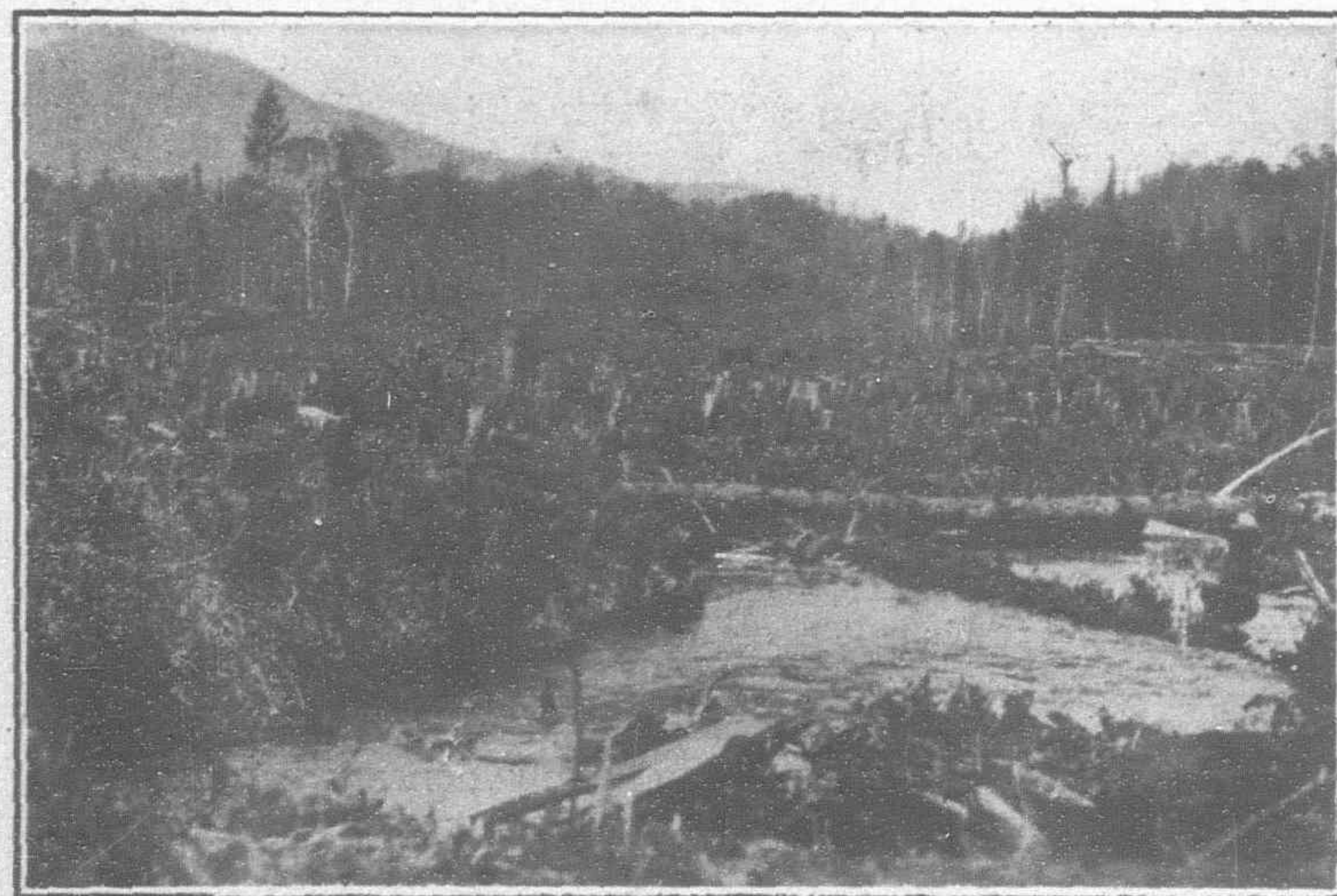
Only a comparatively small portion of the timber has been logged off in the immediate vicinity of the branch line, and there are enormous tracts of forest comprising both hard and soft wood which are as yet untouched. Operations have been somewhat hampered by the fact that this entire district is infested with Hung Hu Tze, and in order to avoid difficulties with these gentry the Railway



No. 2. Assembling Athey Wagon at Shihtou Hotze



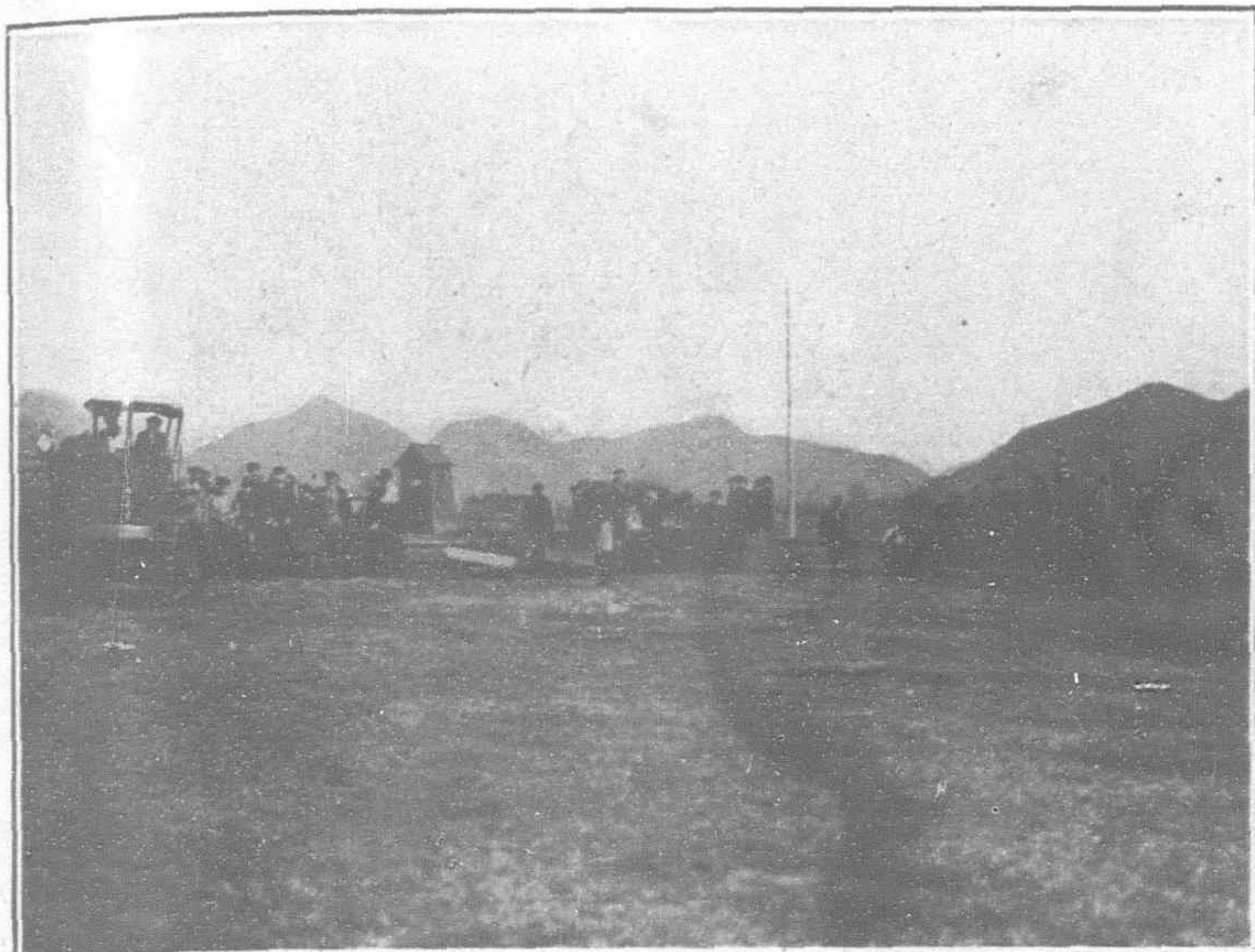
No. 3. Athey Wagon Assembled at Shihtou Hotze



No. 13. Typical Terrain at KM. 35



No. 14. Athey Wagon Crossing River Shown in Photograph No. 13



No. 4. Caterpillar and Wagon Train at Shihtou Hotz Ready to Proceed to Railhead at KM. 35



No. 5. Train En Route

has been obliged to allow them a very considerable annual subsidy in the shape of food and clothing. Over fifty Chinese soldiers are quartered at the rail head of the branch line, and it is quite unsafe to proceed into the forest, even for a short distance, without escort.

From the present railhead to the immediate limits of the concession the maximum haul will be approximately eight miles, but there is still a vast amount of work to be done on both sides of the 35 kilometers of logging railway. The timber rights have been



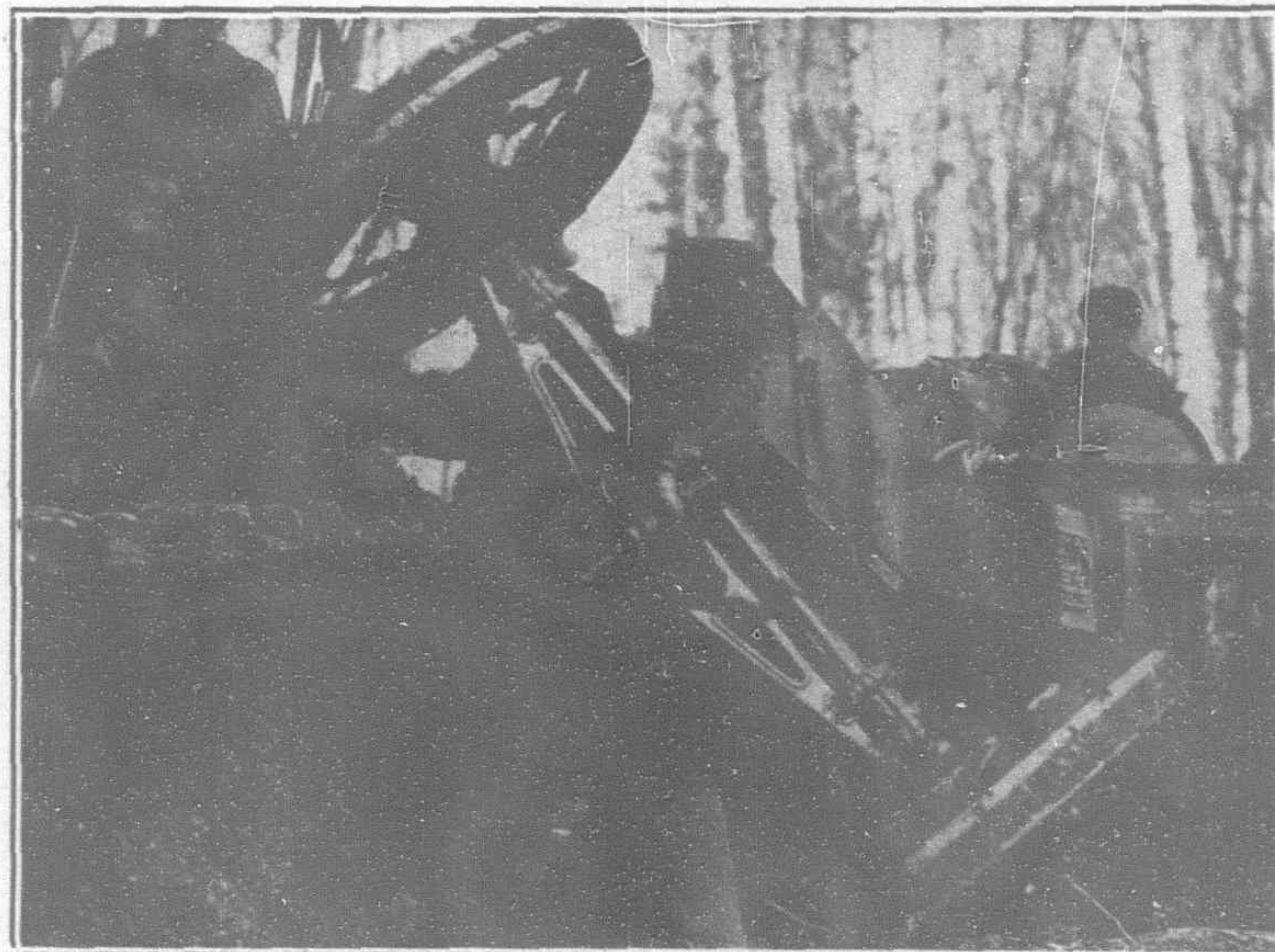
No. 6. Type of Roadway Between Shihtou Hotze and KM. 35



No. 7. Train Descending Grade Between Shihtou Hotze and KM. 35



No. 8. Front Wagon in Collision With Tractor



No. 9. Front Gear on Top of Tractor After Collision



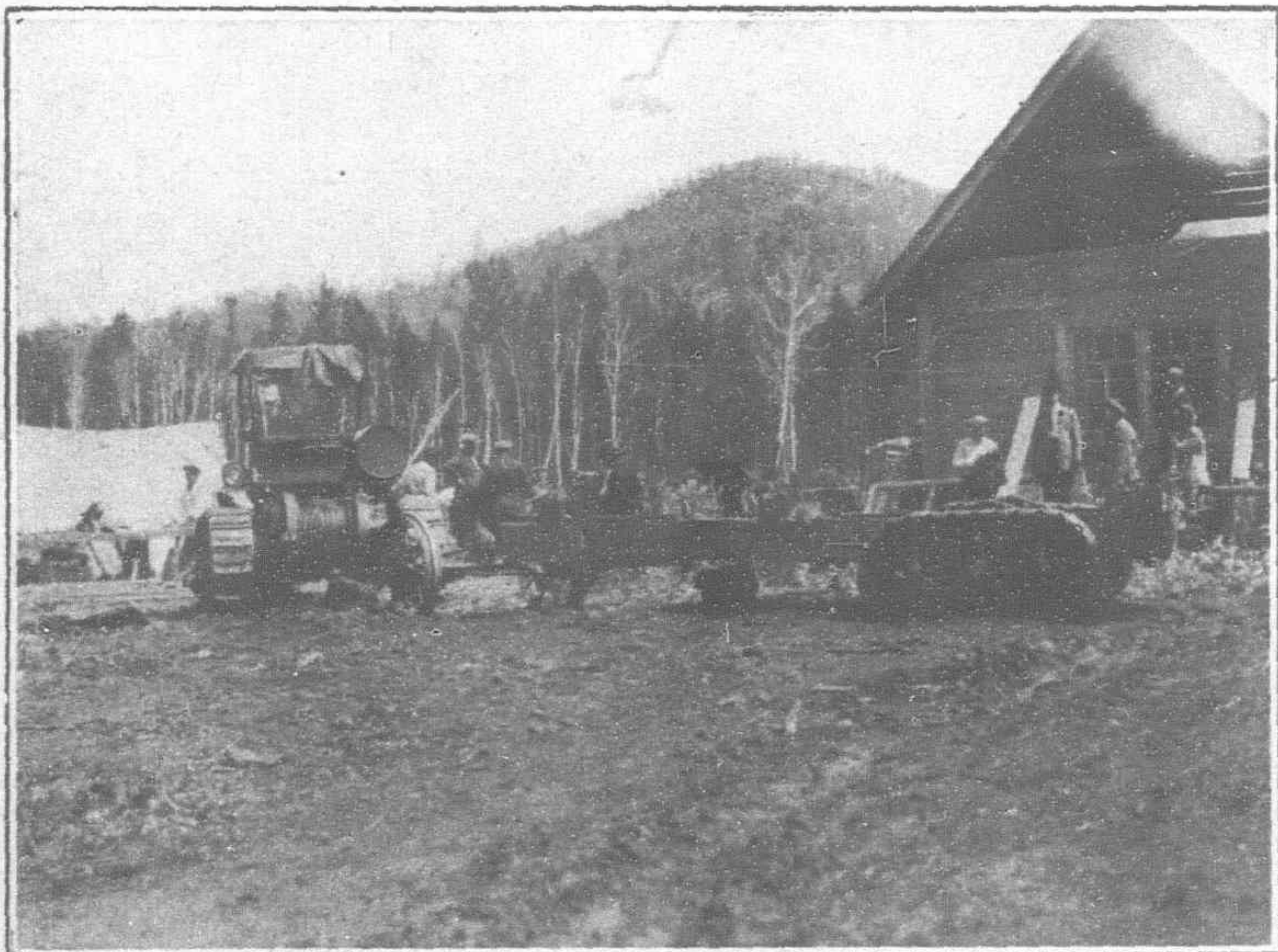
No. 10. Tractor Extension Bent in Collision



No. 11. Garage at KM. 35 Showing One Athey Wagon

granted to the Railway for a period of ten years, and as the concession dates back some two years there are only eight years left for the Railway to finish its operations. All timber, large and small, is cut down.

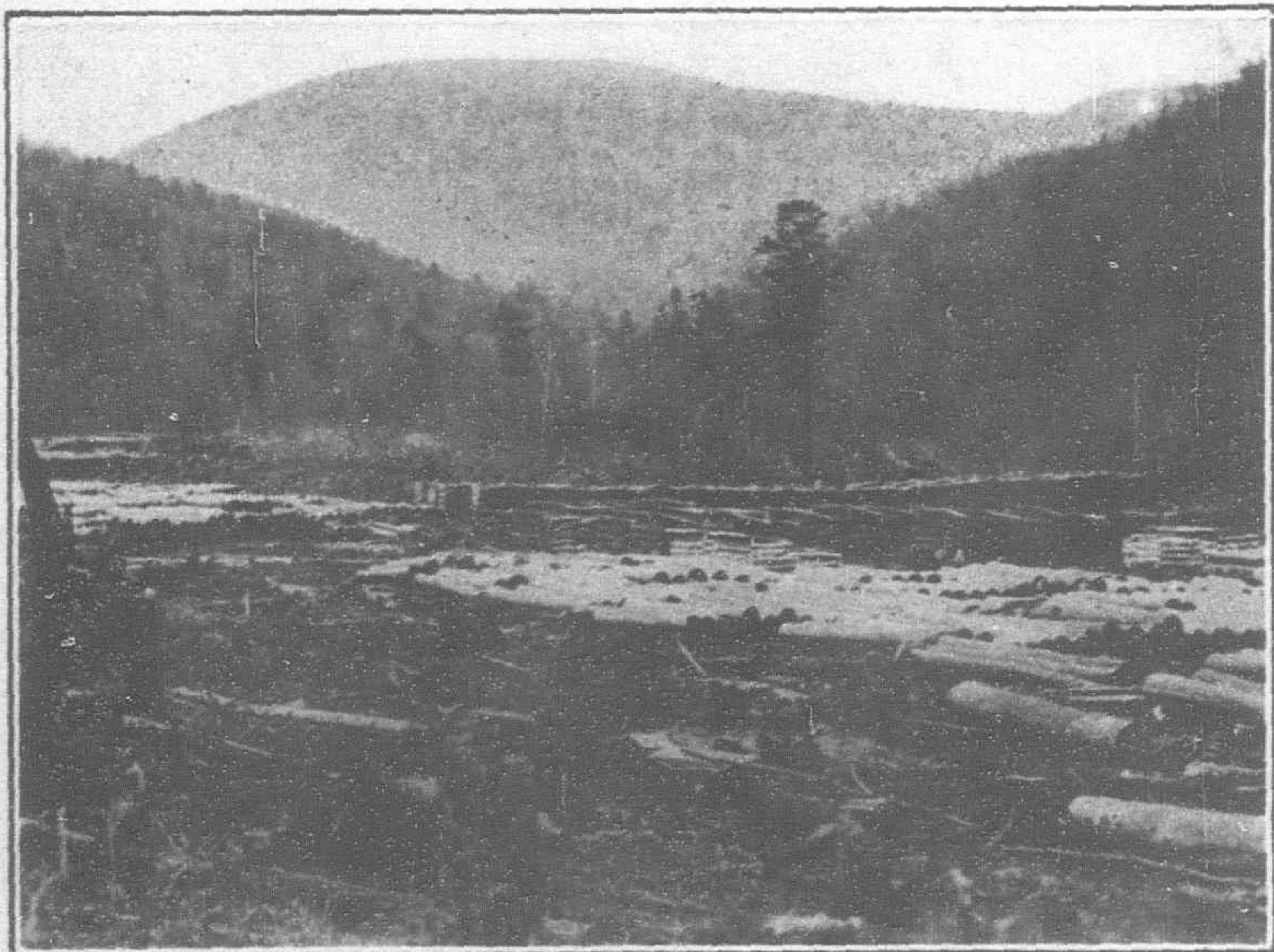
The Caterpillar Tractor and the three Athey wagons were delivered by the Railway at Shihtou Hotze and were assembled at that point. The accompanying photographs numbered 1, 2 and 3 show various stages in the process of assembling. The whole of



No. 12. Tractor Hauling Athey Wagon Into Position for Making Up Train



No. 15. Wagon Train Ascending 15% Grade En Route from Railhead at KM. 35 to Log Yard



No. 16. General View of Position of Log Yard



No. 17. First Athey Wagon Being Hauled Into Position Preparatory to Loading



No. 18. Preparing to Load Wagon

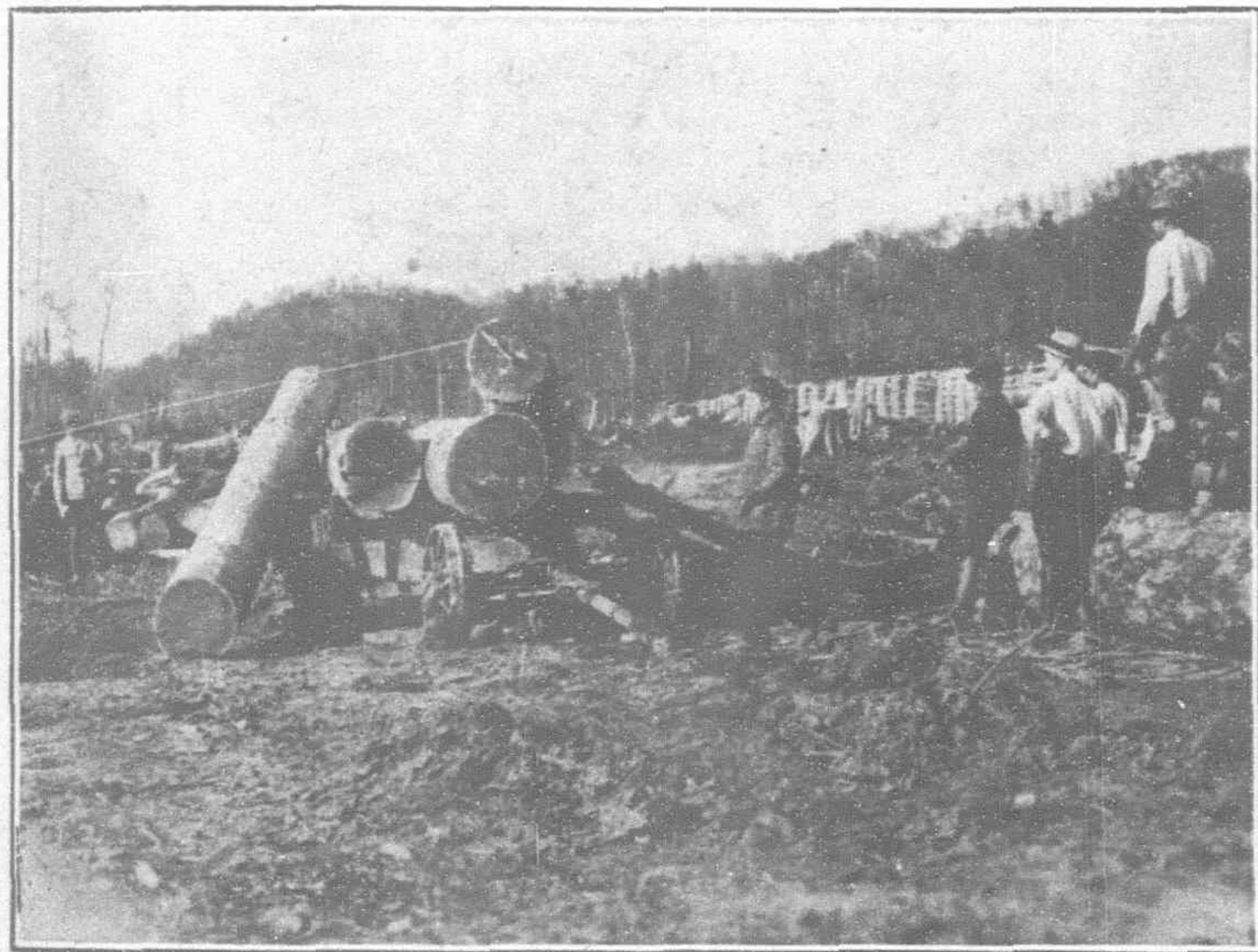


No. 19. Tractor Loading. First Log on Wagon

the assembling work was done within eight hours and without the slightest difficulty, all parts of the equipment fitting with the greatest precision.

Everything being in order, the tractor hauling the train of

three wagons commenced its 35 kilometer overland trip to the branch line railhead in the manner and through the type of country as indicated in photographs numbered 4, 5, 6 and 7. Roads were to all intents and purposes non-existent, and the train proceeded



No. 20. Intermediate Stage in Loading First Wagon



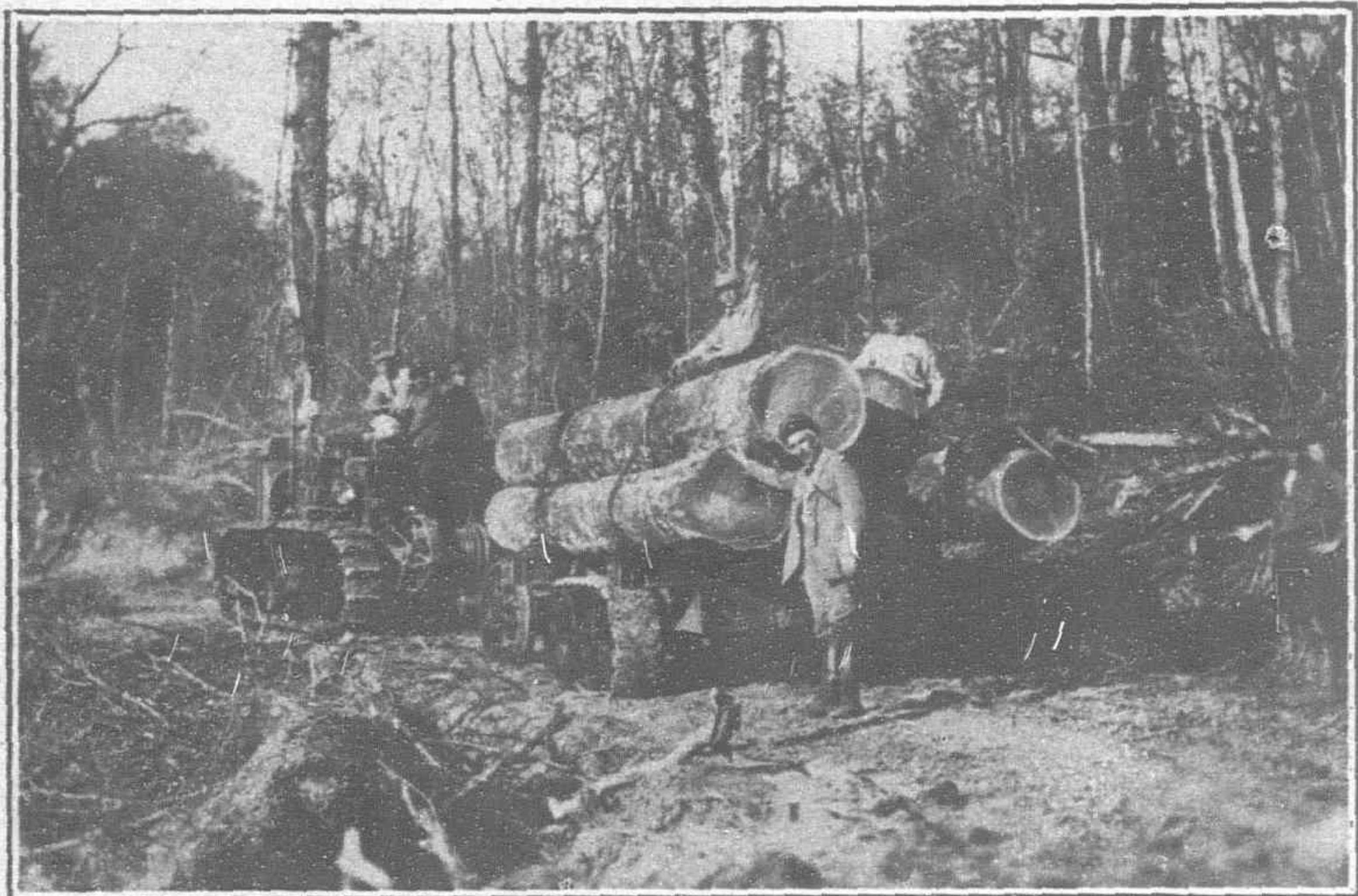
No. 21. First Wagon Loaded and Ready to Leave for Railhead



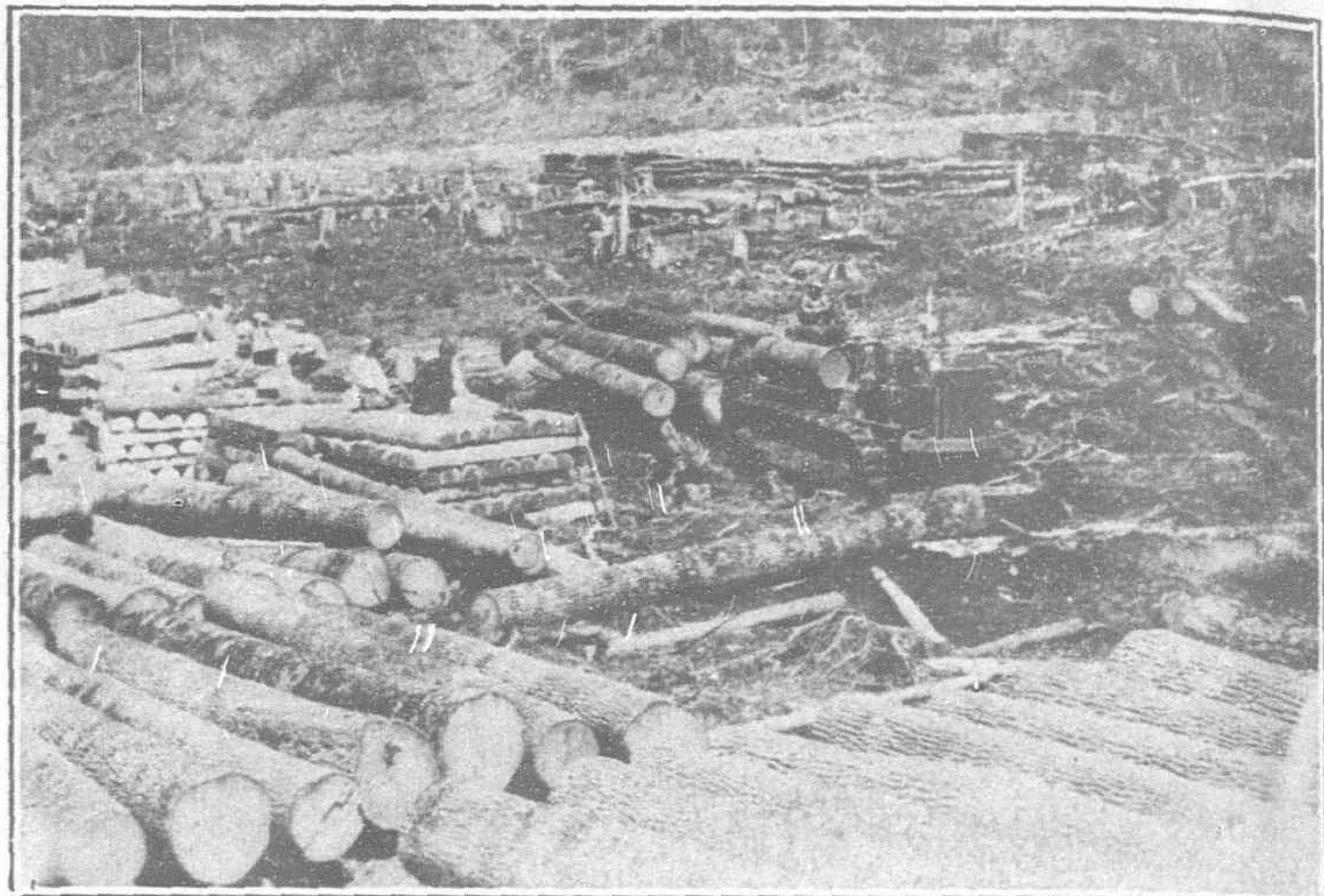
No. 25. Third Wagon Loaded and Being Hauled Into Position for Making Up Train



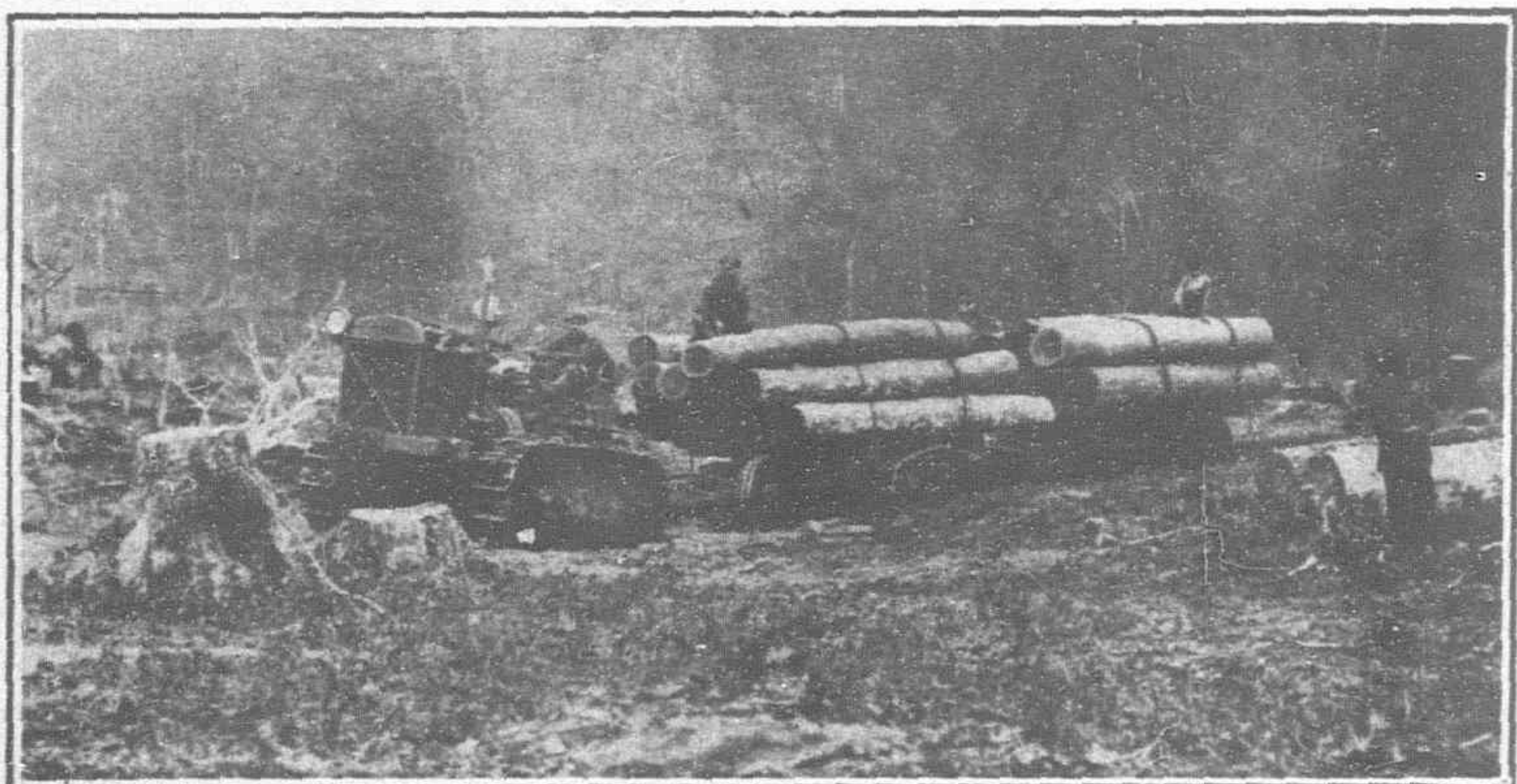
No. 31. Train About to Start for Railhead. Each Wagon Carries Net Weight of Approximately 11 Tons of Wood



No. 22. First Wagon En Route to Railhead



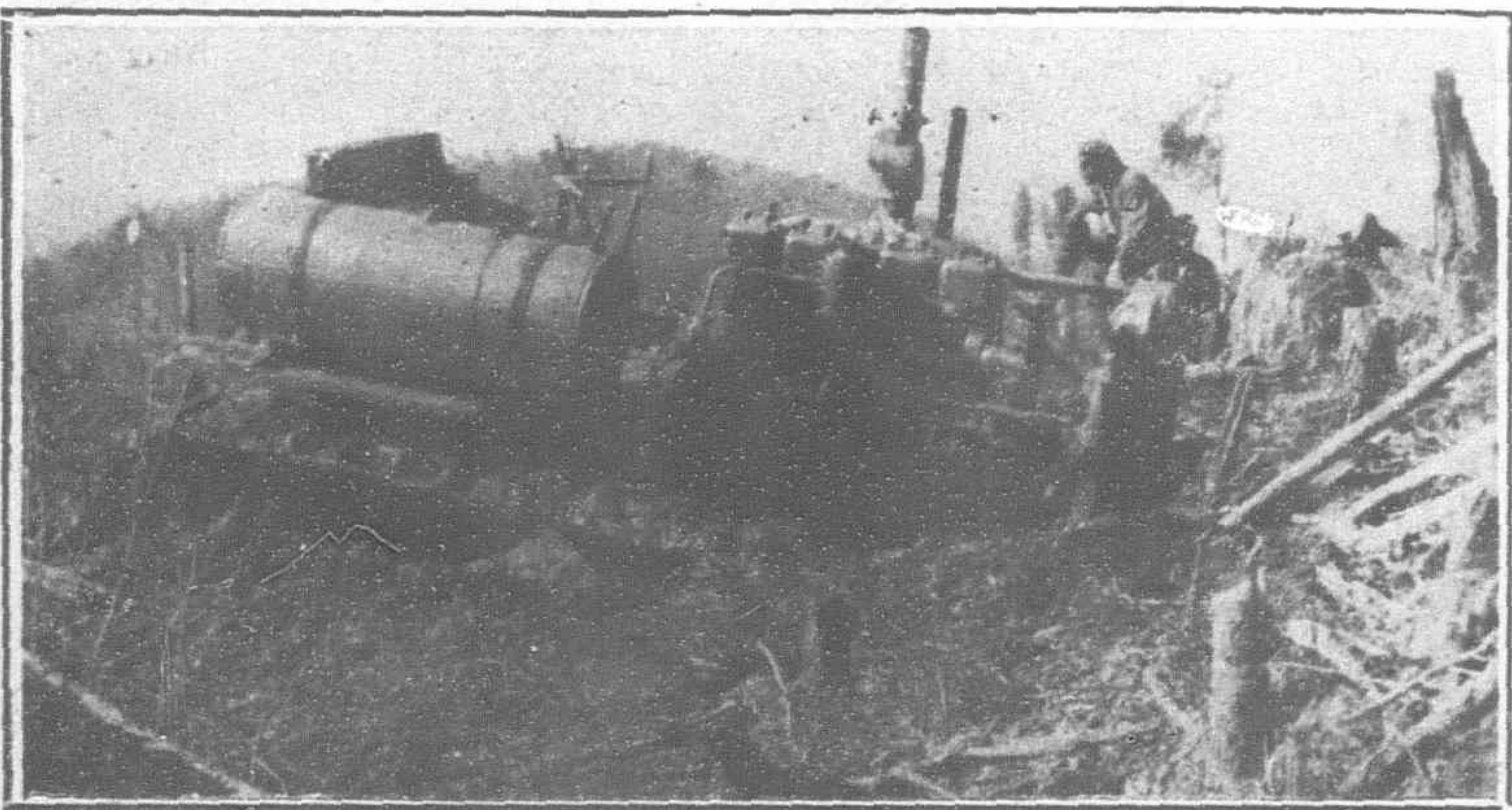
No. 23. Second Wagon Loaded and Being Hauled Into Position for Making Up Train



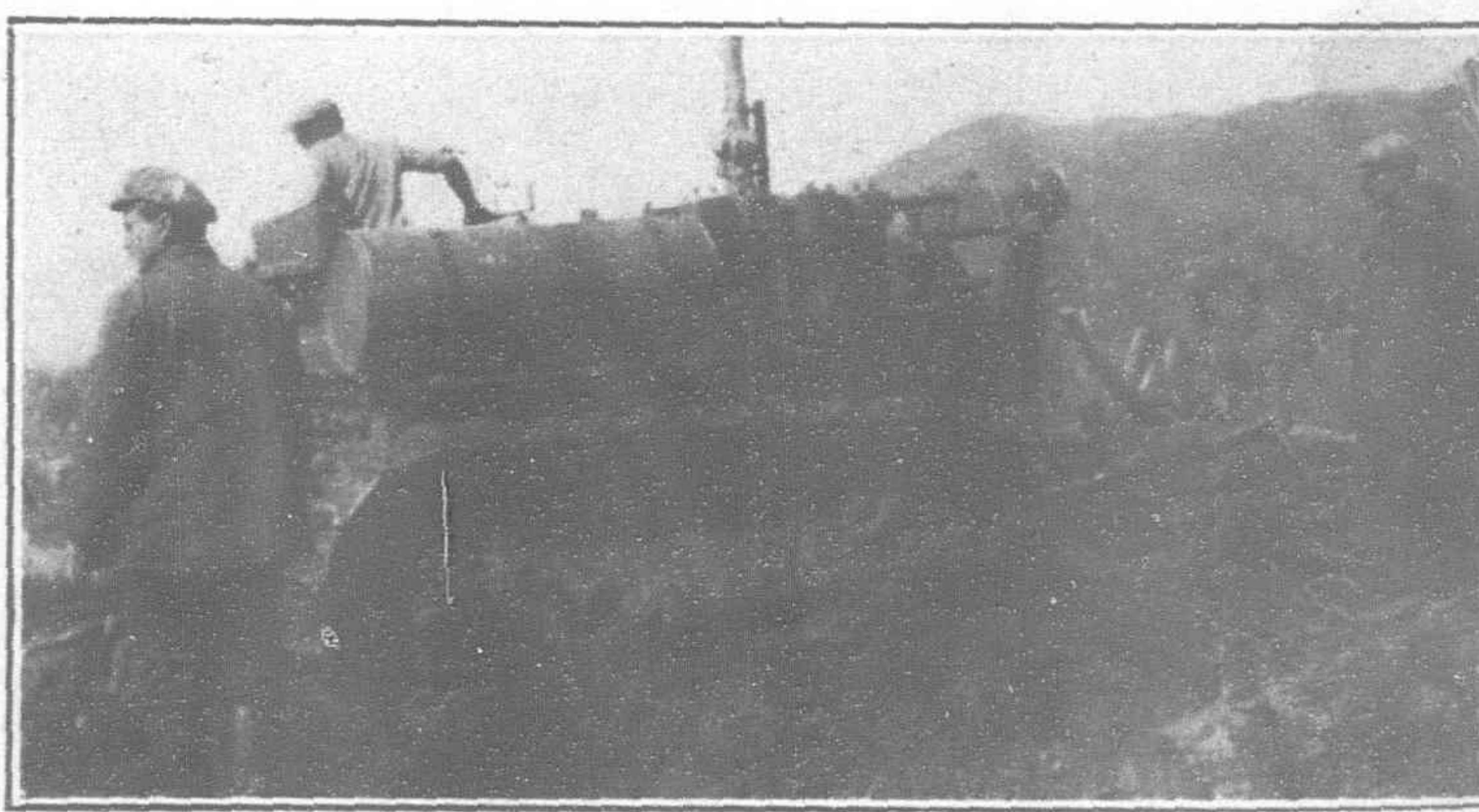
No. 26. Train Made Up About to Proceed to Railhead. Total Net Weight of Logs on Both Wagons Approximately 19.5 Tons



No. 29. The Tractor Drawing Itself Out of the Mud by Means of a Cable Passed from its Winch Through a Block and Back to the Tractor



No. 28. Another View of the Tractor in the Mud



No. 30. The Tractor as it Emerged from the Mud



No. 24. Third Wagon Being Loaded



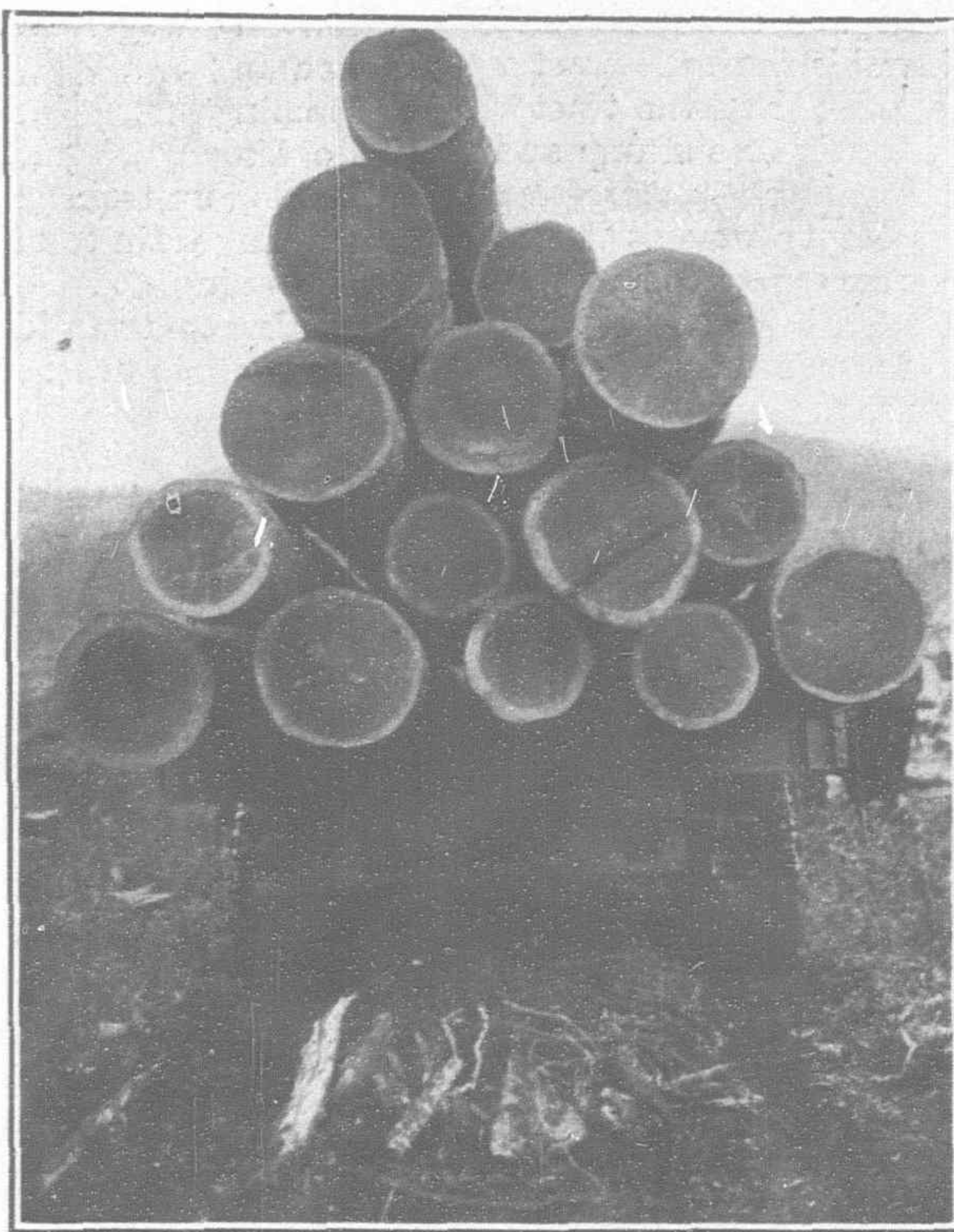
No. 27. The Tractor Deep in Soft Mud Near Railhead at KM. 35

through swamps, rivers and over cordouroy roads without the least difficulty. Several heavy grades were encountered, and while descending one of these the man in charge of the wagons omitted to apply the brakes, with the result that the head wagon crashed into the tractor, as illustrated by photographs 8 and 9. Fortunately no one was injured and the only damage sustained by the equipment was a bent tractor extension, as illustrated by photograph No. 10, which did not prevent proceeding to destination.

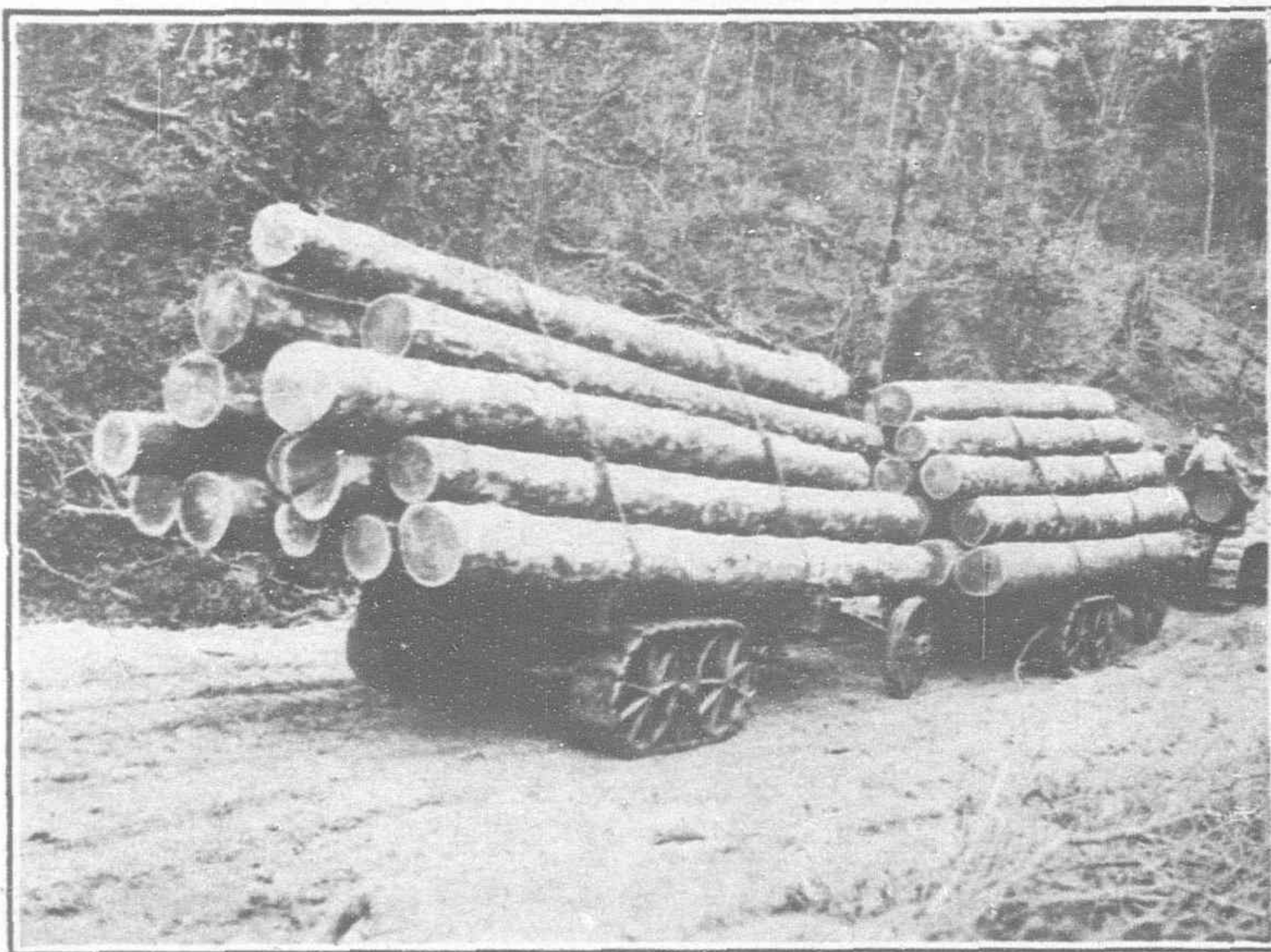
On this occasion very little was done other than demonstrate on a small scale the capabilities of the equipment. The main road from the railhead to the place where the timber was stacked was in such poor condition owing to heavy rains, that it was considered inadvisable to attempt heavy hauling until road repairs had been effected. These repairs consumed approximately two weeks.

Photograph No. 11 shows one of the wagons near the garage at the railhead, and No. 12 shows the tractor hauling this wagon into position for the start to the log yard. The nature of the terrain in the vicinity of the railhead is indicated by photograph No. 13. The small river there shown was crossed at another point without any difficulty, and one of the wagons was stopped in mid-stream to enable photograph No. 14 to be taken. Owing to the frost having recently come out of the ground a considerable amount of cordouroy road had to be laid and in spite of this the tractor and wagons often sunk from 12 to 18 inches into the mud.

The logging road passes over a small hill having a maximum gradient of 15 per cent. on one side and 7 per cent. on the other. Owing to the configuration of the ground it was impossible to obtain a photograph showing the steepness of the grade, but photograph No. 15 shows the tractor



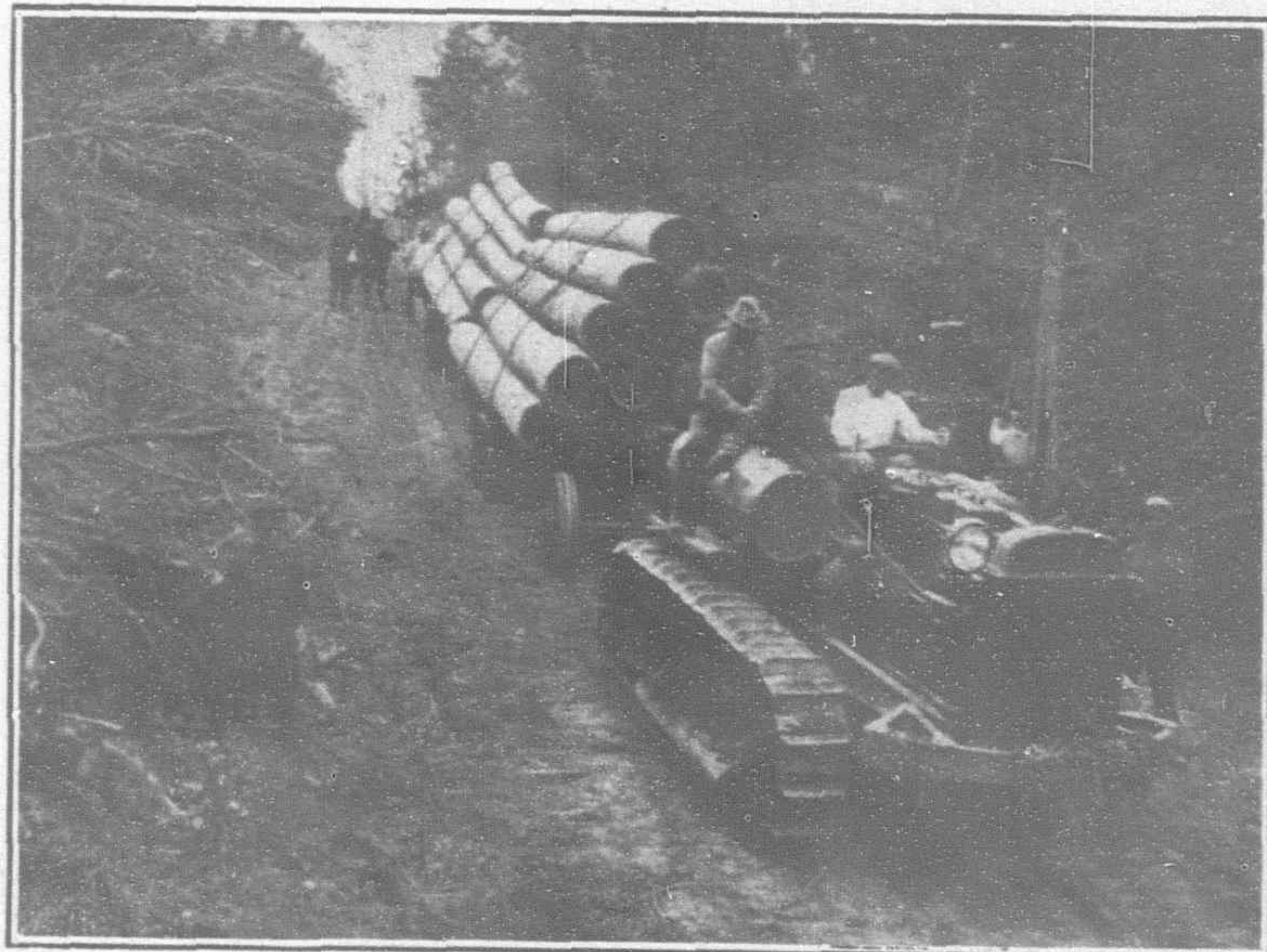
No. 32. Rear View of One of the Loaded Wagons



No. 33. Train Descending 15% Grade



No. 34. Train Descending 15% Grade



No. 35. Train Descending 15% Grade

and the train of three wagons half way up the 15 per cent. grade.

A general view of a portion of the log yard is shown by photograph No. 16. The large logs in the foreground vary in diameter from 12 to 22 inches and are approximately 22 feet in length. Photographs Nos. 17, 18, 19 and 20 show several stages in the loading of the first wagon which was carried out mechanically by the tractor.

Photograph No. 21 shows the wagon and tractor about to start for the railway. Photograph No. 22 was taken en route to the railway.

Later two wagons were loaded, one with twelve and the other with seven logs. Photograph No. 23 shows the first wagon loaded; No. 24 the first wagon hauled to one side and the second wagon being loaded; No. 25 the second wagon being hauled into position in the train, and No. 26 the tractor and the two wagons about to proceed to the railway. In this instance both wagons were loaded by hand in a very short time, averaging twenty-five minutes per wagon. The trip to the railway, a distance of slightly over a mile, was made in twenty-eight minutes, the tractor being handled by the Railway operatives. It is estimated that the weight of each wagon was 9.9 tons of 2,000 lbs., and the trip was made without accident in spite of the fact that this comparatively heavy load was taken down a 15 per cent. grade by men who had had only a few hours experience in handling the tractor and wagons.

A few days after the above test of the equipment had been made, a further test was made of the equipment under the supervision of Mr. Sabatier, Field Engineer of the Caterpillar Company. At the start of this test the tractor sank into the mud up to the bottom of the radiator, as shown in photographs No. 27, 28, 29 and 30. More frost had come out of the

ground since the previous trial, and the road was extremely soft and muddy in certain places. After considerable work the tractor hauled itself out of the mud by passing a cable from the tractor winch through a pulley attached to a neighboring tree stump and back to the tractor.

On arriving at the log yard with three empty wagons it was decided to load entirely by hand as the crew were expert at handling logs in this manner. Two wagons were loaded in a short time, hauled out to the railway and unloaded. In this instance some difficulty was experienced with the rear wagon as the frame extension had not been applied and the logs were so long and they projected so far to the rear that when the train was put in motion the wagon tilted backward. This was overcome by passing a cable from the tractor winch to the top of the rear load and pulling it down into place.

In the afternoon two wagons were loaded with fifteen logs apiece, each wagon carrying an estimated load of 11-12 tons, and were hauled to the railway and unloaded without mishap.

During the process of this trial the Railway tractor operatives were given technical explanations and directions on logging by Mr. Sabatier.

Throughout all tests all of the equipment was operated to the entire satisfaction of the officials of the Forestry Department of the Chinese-Eastern Railway, although the road conditions were severe and the Athey wagons loaded to more than their rated capacity. The powerful tractor did excellent work and when it did get beyond its depth in mud, it was able to haul itself out by means of the power-driven winch mounted on the tractor, which is used for loading logs on the Athey wagons.

The power-driven winch was not used regularly for loading wagons in view of the fact that the Railway operatives have long been accustomed to hand loading, and it was decided to encourage them to continue this method and leave tractor loading for the future.

The following schedule gives a fairly close approximation to the operating time as at present, but this will be improved upon as the operatives become more familiar with the equipment. It is based upon a distance of approximately $1\frac{1}{4}$ miles from loading station to unloading station, and as the distance changes, it will naturally result in change in hauling time. The equipment in the train consisted of one Caterpillar "SIXTY" Tractor and two Athey 10 Ton Wagons.

Hauling wagon No. 1 to loading position	..	5 min.
Loading .. " 1	..	20 "
Hauling .. " 2 to loading position	..	5 "
Loading .. " 2	..	20 "
Making up train	..	10 "
Hauling train to unloading station ($1\frac{1}{4}$ miles)	..	25 "
Unloading	..	15 "
Making up train for return trip	..	5 "
Return trip to loading station	..	20 "

Total .. 125 min.

Each wagon was loaded with fifteen logs, each approximately 22 feet long and 14 inches diameter, weighing 11-12 tons net. Formerly logs could be hauled from the loading station to the unloading station only seventy working days per year, as it was necessary to wait until snow had fallen and formed a hard surface. With tractor haulage and Athey wagons the number of working days will be increased to a minimum of one hundred and fifty per year. Figures giving comparative costs of haulage by the former and present methods are at present being compiled, and it is believed that the actual cost of machinery haulage will be less than the former method.

Photographs No. 31 to No. 35 inclusive illustrate the train in transit. This train was handled entirely by the concession staff without any mishap whatever, and the most satisfactory impression was given to the Railway officials on account of the large quantity of timber which the Athey wagons were able to handle without difficulty.

The above tests were made in the presence of Andersen, Meyer & Company's engineer, the field engineer of the Caterpillar Tractor Company, the Far Eastern Representative of the Caterpillar Tractor Company and the officials of the Forestry Department of the Chinese-Eastern Railway.

Andersen, Meyer & Co., Ltd. are exclusive agents for the Athey Truss Wheel Company for all of China. It is believed that the Athey Truss wheel offers a suitable medium for the transportation of any class of material over country where roads are in poor condition, or are practically non-existent. These truss wheels can be fitted to any type of wagon, and are built for loads from one to fifteen tons.

Book Review

A very interesting pamphlet entitled "Locomotive Feed Water Heater," has been published by the Superheater Company, 17 East 42 Street, New York. It is especially valuable to Locomotive Engineers.

China Architects and Builders Compendium

Edited and Published by J. T. W. BROOKE, A.R.I.B.A., and R. W. DAVIS Price Mex. \$5 net.

Until the first publication of the above work in 1924, no attempt had been made to collect and classify in convenient form the mass of local data that should be at the elbow of every local architect and builder, and available for reference to house and property owners. The first issue was welcomed and succeeding issues have established the Compendium as a practical text book both for the technical man and the property owner.

The edition just off the press contains a great deal of new material both in the text and advertisements. Full details are given of all public and municipal utilities, with fees payable and regulations governing them; local and general information relating to the supply and costs of materials and labour is also a feature of the work.

A section, however, that has proved of the greatest value to architect, builder and property owner is the catalogue of building material. The day of the leaflet and circular is past now that every detail required in an office building, godown, apartment house, or residence, has been classified and listed for easy reference in the Compendium. We have to thank merchants dealing in building materials for their co-operation in making this list as complete and

informative as it could well be, and a means whereby the architect can refer at a glance to the materials locally available as well as for those for which Shanghai agents have been appointed.

The following are the Contents:

I. GENERAL INFORMATION ABOUT LAND, PROPERTY AND BUILDING IN SHANGHAI:

Government, population, position, etc.
Land values, registration, and surrender
Rates, taxes, and consular fees
Water, electricity, telephone and gas supply
Building rules and weather diagrams
Shanghai Fire Insurance Association Rules
Shanghai Property Owners' Association

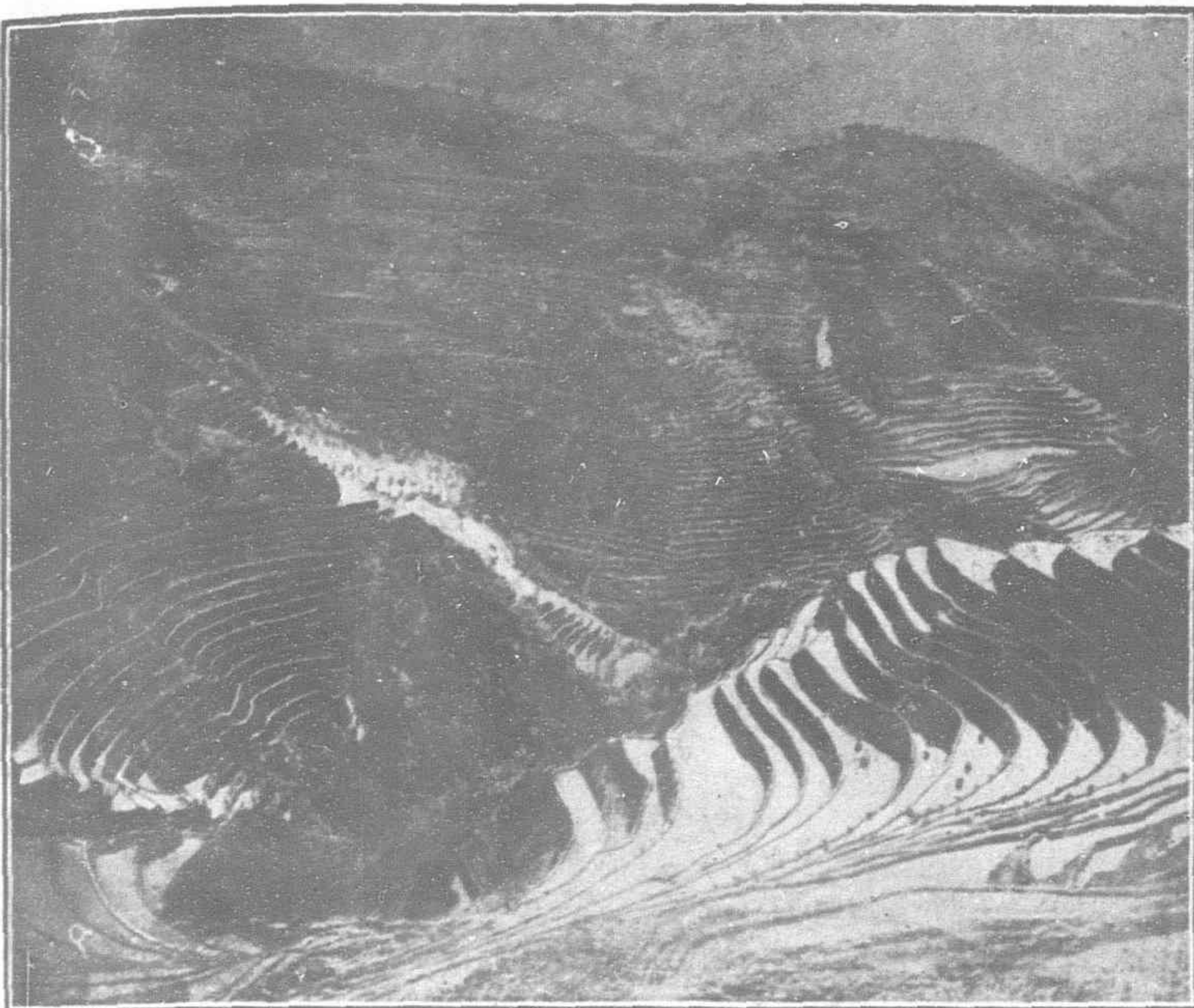
II. TECHNICAL INFORMATION, COSTS AND PRICE LISTS:

Weights, measures and conversion tables
Prices of materials, labour, and estimating data
General articles of local trade interest

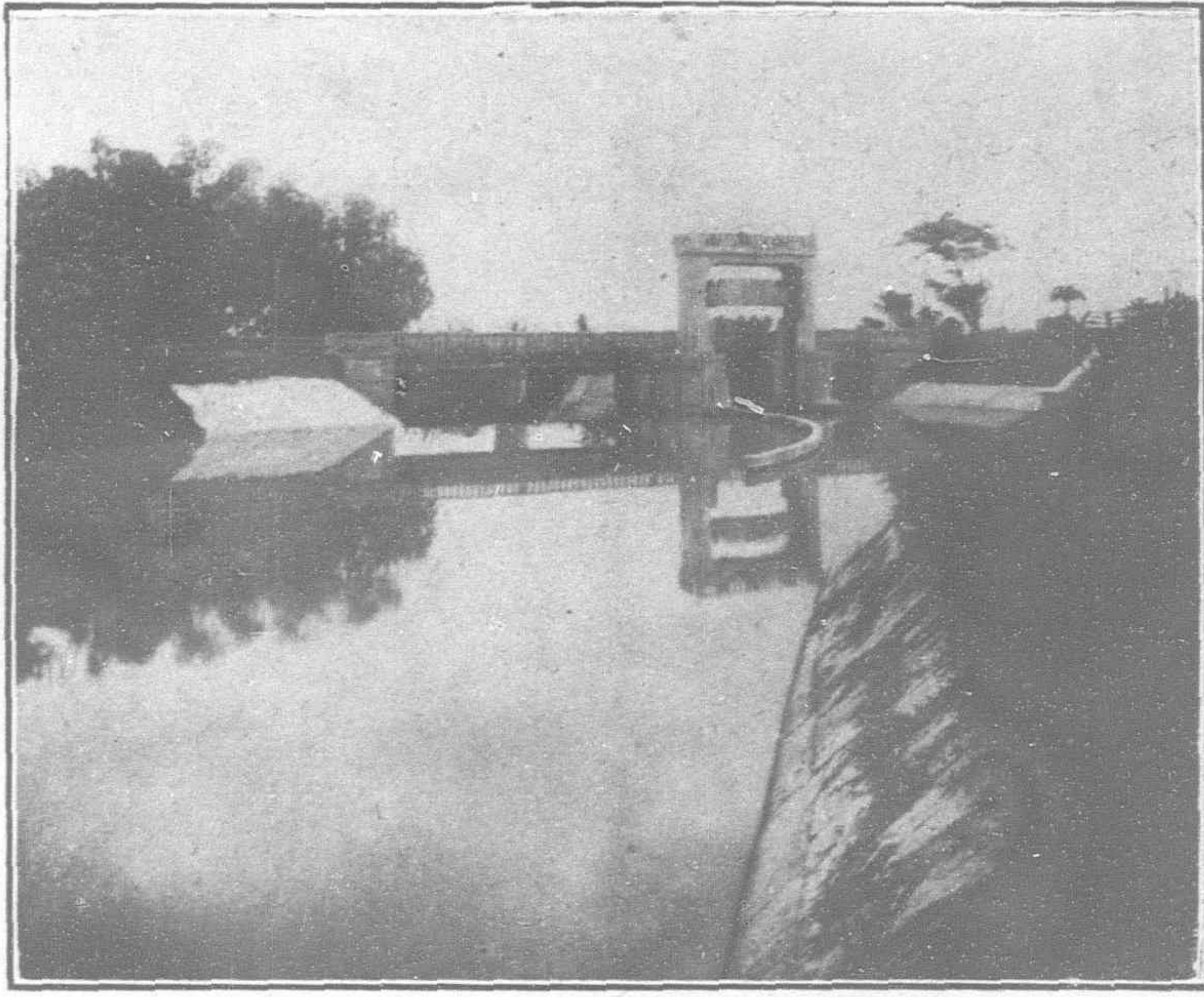
III. DIRECTORY OF ARCHITECTS

IV. CATALOGUE OF BUILDING MATERIALS:

Section A.—Bricks, tiles, cement, plaster, stone
Section B.—Roofing, felts, asphalts, preservatives, paints, varnishes, etc.
Section C.—Foundations, steel, reinforced concrete, fire-proofing materials, safes, fire extinguishers
Section D.—Steel casements, sashes, glass, metal gates
Section E.—Lifts, ventilators, domestic fittings and furniture, heating, power and lighting.



Famous Mountain Rice Terraces at Bontoc



Headworks, Penaranda Irrigation System

Venice in the Rice Fields

Modern Engineering Solves Oldest Philippine Agricultural Problem

By H. F. Wilkins

ONE of the most economically important undertakings in the Philippine Islands since American occupation is the irrigation program of the Insular Government's Bureau of Public Works. There are now in operation 18 irrigation systems, distributed in 12 provinces and serving an area of 66,865 hectares of land. These were completed and financed almost entirely by the government at a total cost of P12,908,357.

This work has been going on since 1923, but most of it has been completed since 1923. The main idea is to make the Philippine Islands self-supporting in the matter of rice production, economically independent in growing the staple food of the Orient. It looks very much as if they are on the way to becoming just that in the not far distant future.

In the last two decades, importation of rice to the Philippines, most of it from Indo-China, has averaged 180,000 metric tons, valued at P12,000,000 a year.

Data from projects that have been operated over a period of years or months show that increase in yield, as a result of irrigation, is about 30 cavanes per hectare for the rainy season crop alone, and it is estimated that the expected increase in production in the newly

irrigated districts will in the immediate future reduce by more than one-half the average annual importation of rice unless the production of rice in other sections of the country falls below normal.

Mountain Rice Terraces

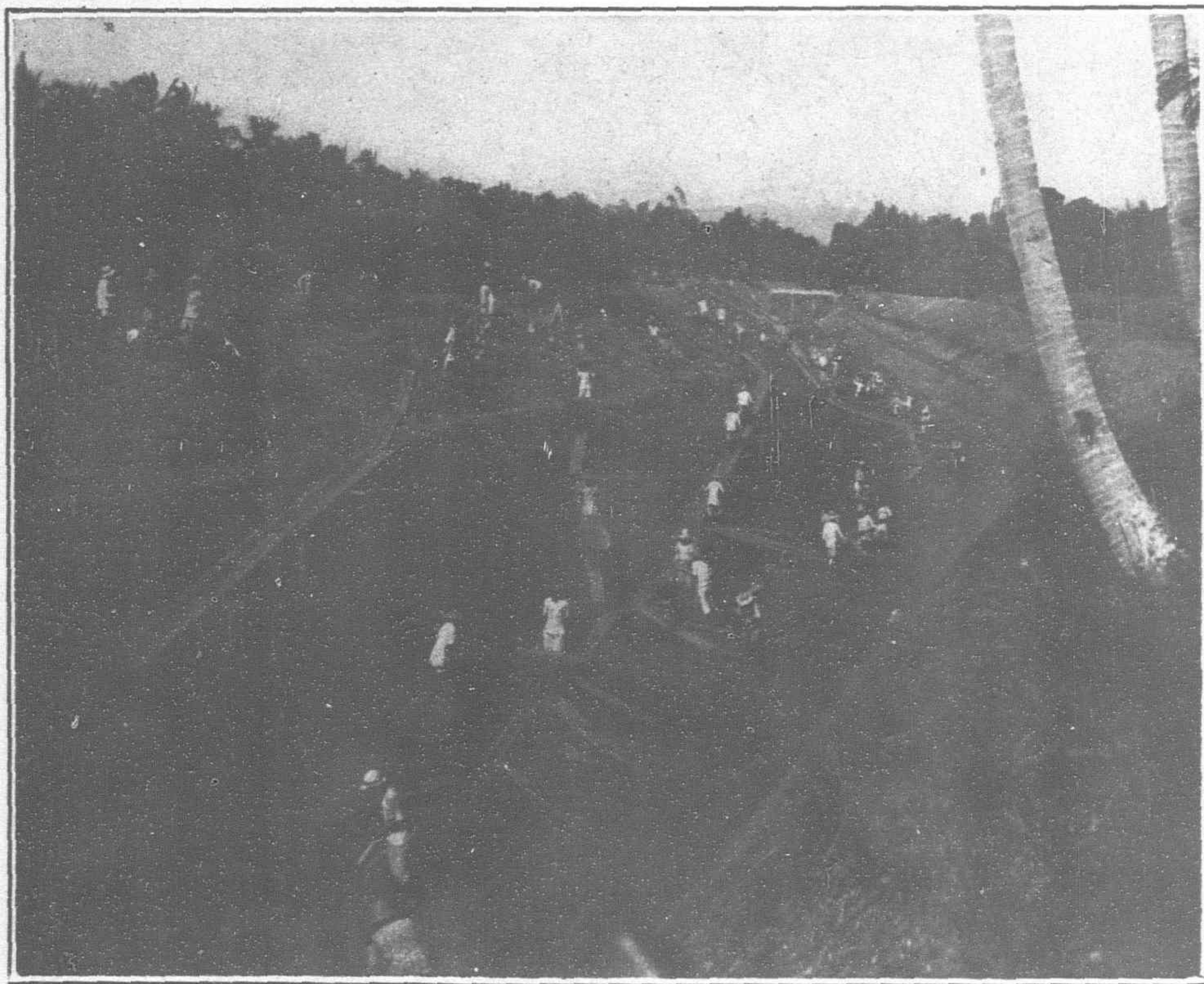
Irrigation of rice fields in the Philippines is not a new development. Modern methods of doing an old task furnish the new part of it.

The only true native works which have survived the test of time and weather are the great communal terraced-irrigation systems of Mountain Province. These served the same purpose as modern construction in irrigation, only the topography was different. Great mountain sides covered with series of terraces in the northern part of Luzon provide an unparalleled spectacle.

These are of special interest, since they are estimated to have required some 1,200 to 1,500 years to build, and they were already old when the authentic history of the Islands begins. Shrouded in the haze of past ages, their origin offers a field for study comparable with the works of the Incas.



Combined Culvert and Drop in Lateral Canal



Digging the Main Canal, Santa Barbara System

Irrigation was already an old art when the Spaniards arrived. They brought with them the knowledge they had gained through their world conquests and were in a position to undertake extensive works of this nature. While the government does not appear to have played a large part in this particular phase of development, friars who were keenly interested in the increase of production of rice on the vast estates they possessed through bequest in the provinces of Rizal, Bulacan, Laguna and Cebu, constructed many important systems which compare favorably with similar works in any part of the world, and have played an important part in the development of agriculture in the provinces where they are located.

On the friar estates purchased by the government in Cavite province, there are 28 irrigation systems. These were well constructed, and they serve a total area of more than 23,000 hectares. It has been estimated that it would cost at least P7,500,000 to duplicate them as they stand to-day.

So with these systems and the aforementioned Mountain Province terraces, which might lay claim to rank among the wonders of the world, the Philippines have a notable background in the matter of irrigation. The remarkable thing is that these mountain terraces and the work done under forced labor at the behest of ancient friars, still stands to-day, and the lands on which they are situated are still producing good rice crops.

Williams' Hobby

But still the land of the Islands has never been able to produce enough to make the country economically independent of rice import. It is a well known fact among business men and men in public life in the Philippines that this matter of irrigation has been one of the main hobbies of the able Mr. A. D. Williams in his administration as director of public works. It is his aim to modernize and extend these systems until the Islands do become self-supporting. To that end he and his associates have labored well with modern tools and methods in the last few years.

Here is a synopsis of important facts with regard to the irrigation work of the bureau:

Completed Irrigation Systems

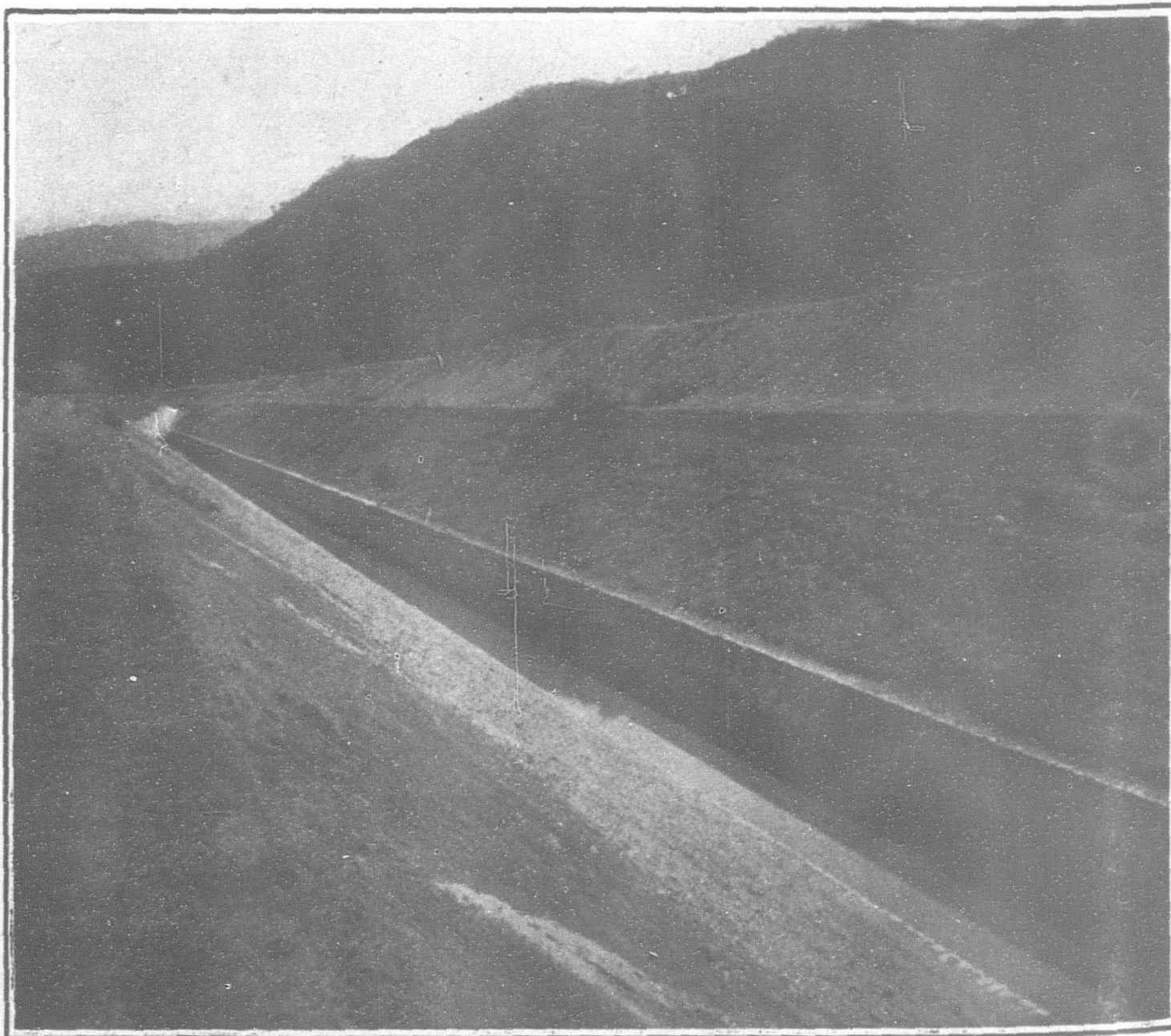
Number	18
Population of towns benefited	572,304
Area served in hectares..	66,856
Total cost of construction	P.12,908,357
Average cost per hectare	P.193
Average value of irrigated land	P.1,000
Annual irrigation charges per Ha. .. .	P.8.72 to P.22.26
Number of years to pay	20 to 40

According to Nicanor Cortes, chief irrigation engineer of the Bureau of Public Works, the government program of irrigation had two other main purposes in addition to that of making the islands independent in rice production. One was to prevent the failure of the rice crop on irrigated land during droughts which occur once or twice in five years. The other was to make possible the raising of auxiliary crops, such as mongo, corn, beans, tobacco and garden truck during the dry season.

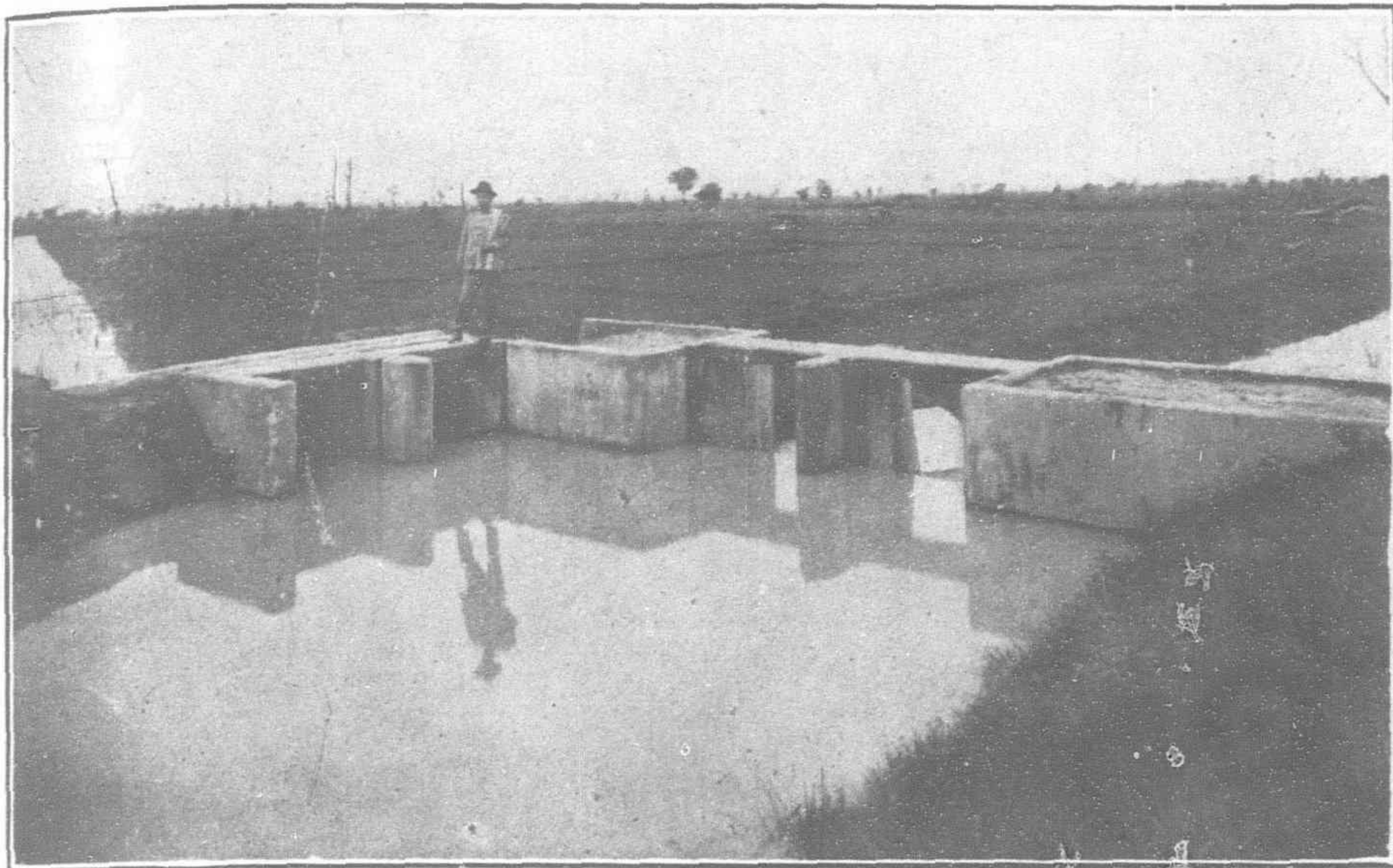
"The program," says Cortes, "contemplates placing under irrigation 160,000 hectares of rice land with the proceeds of the sale of bonds amounting to P.20,000,000 authorized by the Philippine legislature, in addition to the amount of P.3,297,000 appropriated from current government revenues from 1918 to 1921. It was estimated that the increase in production of this area of 160,000 hectares of rice land would cover the shortage in the islands' rice production of rice."

General Description of Irrigated Districts

All irrigation systems, according to Cortes, have been built in thickly settled districts that are under intensive cultivation and



Main Canal Completed, Amburayan System



Combination Check Gate, Talavera River System

are provided with good facilities for transporting products raised there to the great centers of population. They are traversed by first class roads, and many of them by rail lines.

Landholdings are very small, less than five hectares on the average. There are only a few farms having an area of less than 100 hectares. The value of the lands irrigated ranges from P.500 to P.2,000 per hectare, the average being about 1,000 *Pesos*. The average cost of the systems is P.193 per hectare.

In general, the lands irrigated are flat. Mostly they are located in the plains of central Luzon, the northernmost and largest of the Philippines, along the west coast of northern Luzon, and on the plains of the island of Panay. On every project, there are two irrigation seasons, wet and dry. Rice is of course the principal crop in the wet season, which begins in May or June and lasts until November or December. Sufficient rain to barely harvest the crop falls during this wet season, but it is not well distributed, and this is what makes irrigation necessary.

The dry season begins in January and ends in March, during which there is a very limited supply of water in the rivers. The supply available for most of the systems is not sufficient to mature a second crop of rice planted on the entire irrigable area, but it is usually sufficient to mature dry season crops—sugar cane, mongo, peanuts, and garden truck.

Classification and Finance

Depending on the method of finance and administration, these irrigation systems of the Bureau of Public Works in the Philippines are classified as insular, municipal and special systems. Insular irrigation systems are those built in accordance with what is known as the irrigation act, and are entirely financed by the Insular Government.

The cost is reimbursed by the landowners benefited in equal annual installments with 4 per cent. interest within a period of not more than 40 years from the date of completion. For those projects undertaken since March, 1922, the interest has been increased to 6 per cent. and the number of installments reduced to 20. The completed systems of the Insular classification, those financed by the government alone, are 14 in number, and with one exception they are all operated by the Bureau of Public Works.

Cost of operation and maintenance, which averages P.3 per hectare, and insurance, which is 2 per cent. of all the other annual charges, is also collected yearly from the landowners benefited.

Municipal irrigation systems are administered by the municipal councils of the towns in which they are located. Two-thirds of the cost of these systems was furnished by the Insular

Government and one-third by the municipal council in each case. There are only two of these municipal systems built under the administration of the bureau.

Special Systems

There are two special irrigation systems built under the direction of the bureau, making the total of 18 now complete and in operation. These are the Trinidad Irrigation System in Benguet sub-province and the San Miguel Irrigation System in Tarlac.

The first was built under special authority granted by the Department of Commerce and Communications, and it serves a portion of the government lands administered by the Trinidad Farm School, besides other private lands in the Trinidad.

Consequently, though it is in a producing district, this system is classed as more experimental and educational in purpose than the rest, and it is administered by the superintendent of the school.

The other special system, the San Miguel, was built under a special contract with the Compañía General de Tabacos de Filipinas, which has recently obligated itself to pay the government P.29,000 annually. This amount represents 4 per cent. on the net investment in the system.

The canal system is administered by the company under the general supervision of the Bureau of Public Works, excepting the first three kilometers of the main canal and the headworks, which remain under the control of the bureau.

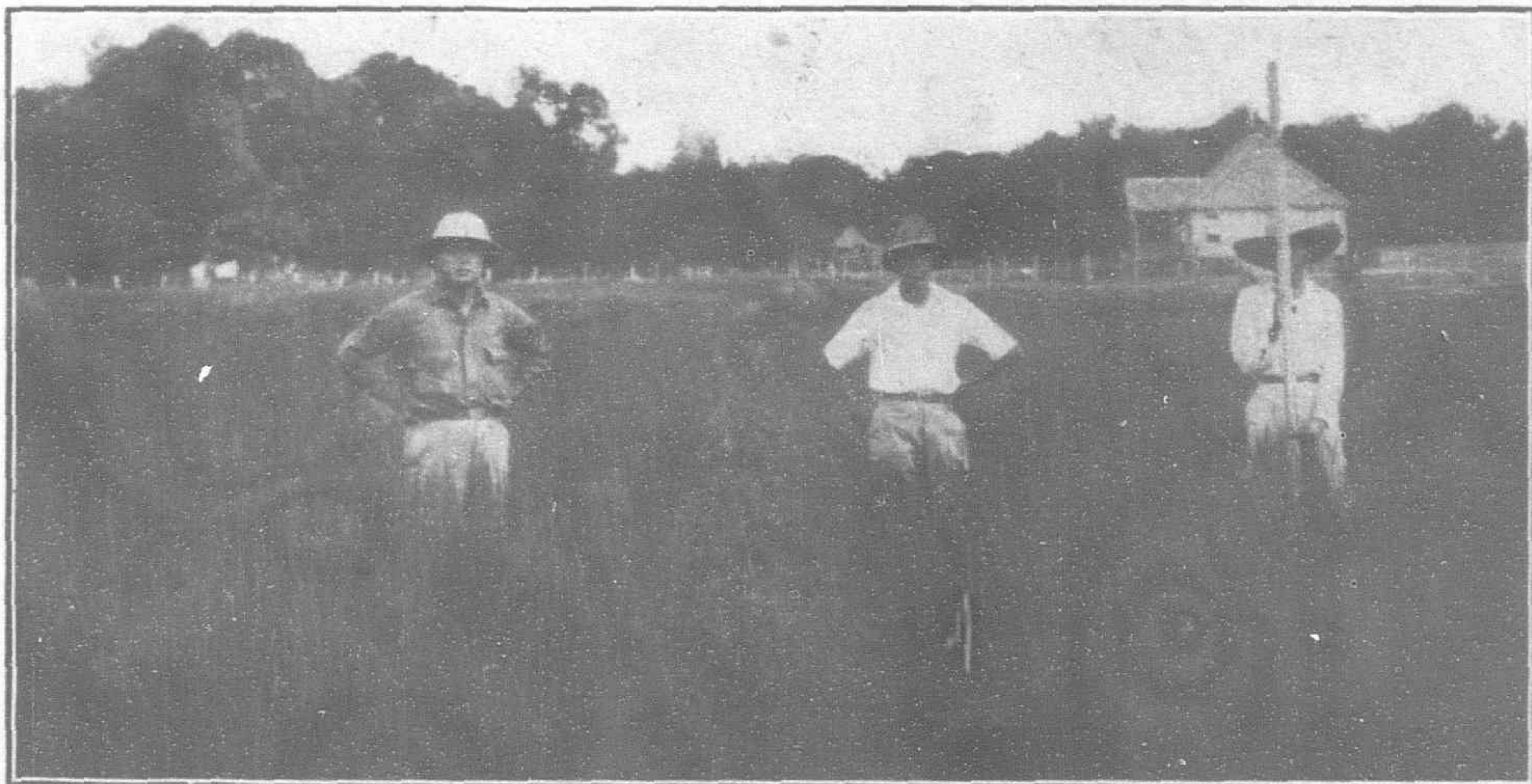
Construction of the so-called municipal systems were discontinued in 1922, and no additional funds have been set aside for projects of this nature. Some more special systems may be constructed however as occasions arise.

The Angat River System

The present irrigation program of the Bureau of Public Works was really inaugurated in 1918, despite the fact that one or two systems were completed several years earlier than that. Under this program, the first big system and the biggest and most important system yet built is the Angat River Irrigation System.

In plan and detail it is thoroughly representative of the other 17 projects completed and in use. A word sketch of this system gives a glimpse of what the bureau has accomplished in the total program, of the conditions prevailing and problems encountered in carrying out irrigation construction work in the Philippines.

The Angat district comprises 22,000 hectares of land, 10,000 of them on the north side of the Angat River, source of supply, and 12,000 hectares on the south side of the river. The center of the area is 40 kilometers north of Manila. The lands have been under cultivation for years and are among the finest agricultural



Results of Irrigation, Angat System

lands in the Philippine Archipelago. Population is very thick. About 112,000 people live in the 12 towns benefited by the district. Practically all land in the district is owned by residents, but holdings, as elsewhere in the islands, are relatively small, only a few of them exceeding 100 hectares.

Almost the entire area under the project is devoted to growing one crop of rice a year, but it was producing a relatively low yield owing to the insufficiency of rainfall to satisfy the water requirements of the rice plant—this was the situation before construction of the system. On the average, two crop failures were reported for every five crops planted. A small portion of the area was used for growing sugar cane, corn, tobacco and vegetables. It was estimated that the yield of rice would be increased under irrigation to 30 to 60 per cent. over the average of 1,250 kilos of rough rice per hectare prevailing in the territory before construction began.

Transportation, Market Facilities

Transportation facilities, according to a report prepared by the Irrigation Division, before the work was undertaken, were among the best to be found anywhere in the Philippine provinces. Automobile roads of macadam and other roads of less permanent construction traverse the tract from north to south and from east to west.

Numerous passenger buses and freight trucks made regular runs over these roads, and they continue to do so. Rail lines from Manila terminal cross the center from north to south and traverse the southern and western boundaries. The project was located near great centers of population, where the anticipated increase in production would find a ready market.

Surveys of the Angat River showed that there was sufficient water available to supply the anticipated demand. The water required was 1.5 second-liters per hectare, the flow usually required in land having soils and sub-soils of heavy texture. The irrigation season begins in May and June when the nursery beds are prepared and ends in November and December when the crop is harvested. Transplanting is done in June and July.

The irrigation plan provided for the diversion of water from the river by means of an overflow dam located near the town of San Rafael, into two main canals, north and south, and the delivery of water from these main canals through two distribution systems to lands on both sides of the river.

The most important features of the system are the diversion works, consisting of a low weir and two headworks, the north and south main canals provided with spillways and settling basins, and the distribution system serving lands with a very gentle slope and with numerous road, railroad and drainage crossings. Reinforced concrete was used in all the structures.

The Diversion Works

The works consist of a low diversion weir and of the north and south headworks with their appurtenant sluiceway channels. The dam is 502 meters long between the piers of the sluiceway channels and is three meters high. It is built of 1:3:6 mix concrete, covered with a wearing surface of 1:2:4 mix, 30 centimeters in thickness, designed to stand the abrasive action of the sand and gravel carried by floods.

The weir rests entirely on sand and gravel foundations, which extend more

than 13 meters below the river bed, the depth reached by borings. A row of steel sheet piling 6.7 meters long on the heel of the dam and the long rear apron was specified to increase the distance water must travel to percolate beneath the dam, thus preventing its undermining, and decreasing the hydrostatic uplift.

The general design of the weir is similar to that in use elsewhere, particularly in India, but it has a few modifications. Prominent among varied features is the talus or paving below the downstream apron of the dam, which is thinner and shorter than that called for by empirical formulae.

The talus consists of square reinforced concrete blocks, 1.5 by 1.5 meters, decreasing in thickness from 30 to 60 centimeters. The lower seven blocks linked together and anchored to a wall to prevent their separation from the main body of the structure, form a flexible mattress that adjusts itself readily to scour. The length of the flexible portion of the talus is about twice the depth of the maximum scour in the river.

With this innovation, a saving was effected in materials and labor over the design based on the standard practice, this saving amounting to about 20 per cent., or approximately P.200,000, a distinctly worth while economy.

Shutters and Headgates

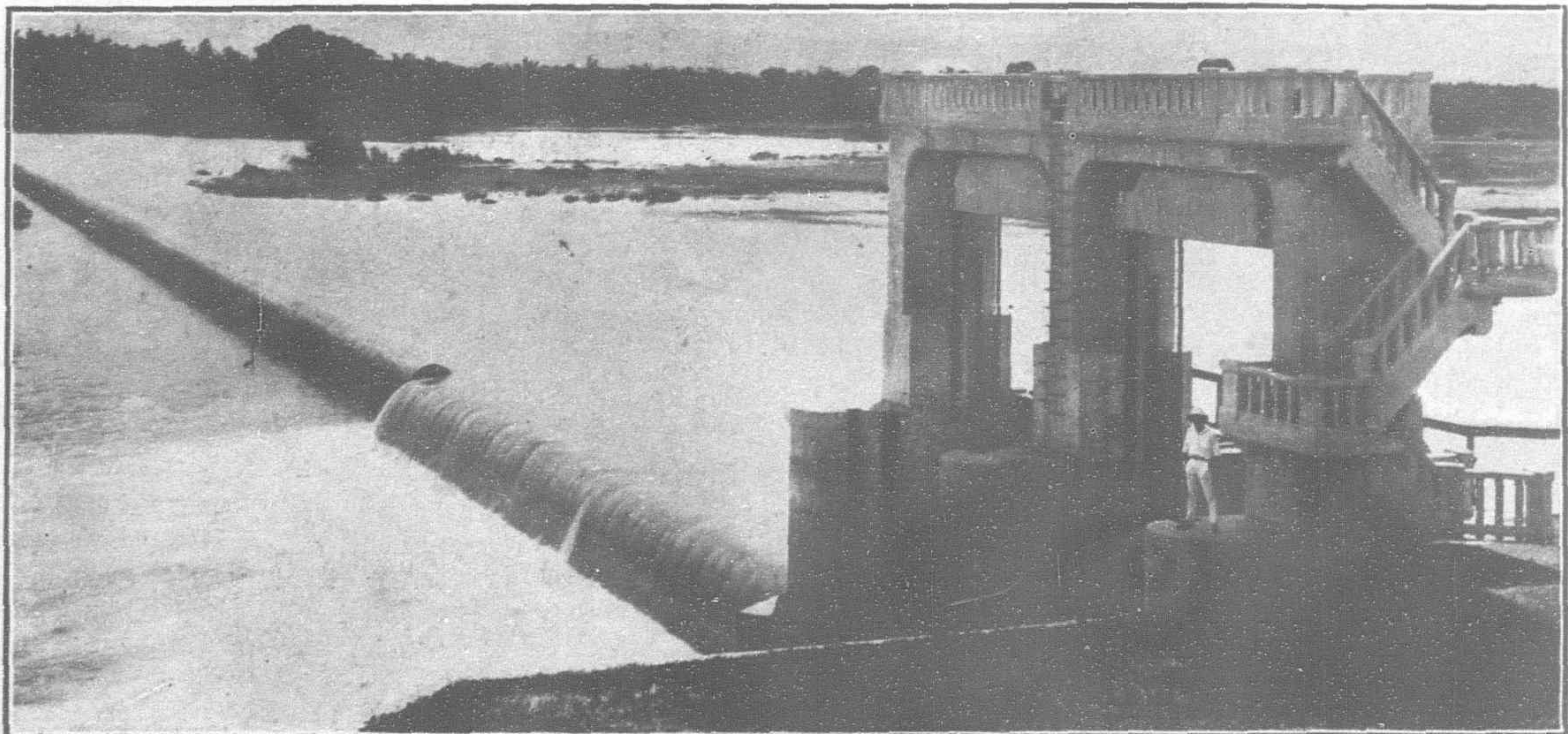
At each end of the dam, according to Mr. Cortes' description, there is a section 50 meters long provided with automatic falling shutters, each 90 centimeters high and two meters long, which are designed to fall with the rising flood and are intended to prevent the formation of sand and gravel bars in front of both headgates, and also to increase the capacity of the weir for discharging the flood flow. The maximum volume of flood is estimated at 7,000,000 liters per second from a mountainous drainage area of about 870 square kilometers.

The headworks consist of the main canal headgates, which are designed to regulate the flow of the water entering the system, and of the sluiceway channels intended to remove the sand and gravel from river water flowing into the main canals.

There are 12 gates 60 inches wide and 48 inches high in the south headworks and 10 gates of the same size on the north side. The water, with proper regulation, will enter both headworks with practically the same velocity as in the main canals.

The south sluiceway channel is 48.33 meters long and 13.5 meters wide. The channel is closed by two sluiceway gates of the Stoney type, 15 feet wide and 10 feet high, operated by hand. The north sluiceway channel is 39.88 meters long and 9.5 meters wide. This channel is closed by a Stoney gate 20 feet wide and 10 feet high, also operated by hand. The bottom of the sluiceway channel is placed 1.2 meters below the sill of the gates in both north and south headworks to give ample room for the deposition of sand and gravel. When the Stoney gates are closed and the water enters the main canals, the velocity of flow in the sluiceway channels is about 60 centimeters per second, which is far below the critical velocity. Deposits of sand and gravel accumulated in the sluiceway channels are removed by closing the main canal gates and opening the Stoney gates.

The diversion weir, including sluiceway channels and the main headgates, involved the excavation of about 70,000 cubic meters of sand and gravel, the placing of 23,340 cubic meters of reinforced concrete requiring more than 40,000 barrels of cement and 325 tons of reinforcing steel,



Headworks, Angat River Irrigation System, Philippines

and the driving of about 11,500 lineal meters of United States steel sheetpiling and 6,300 meters of Wakefield sheetpiling.

Distribution System

The distribution system in the north and south units is almost symmetrical. The main canals follow roughly the river banks from the intake almost to their ends. The banks are the highest line of the project. The south unit is protected from inundation by a dyke 16 kilometers long, and the south main canal is provided with an automatic spillway and escape which functions as a safety valve for excess water in the main canal, either from the river or from the hillsides.

The north main canal is also provided with spillways and settling basins, intended to take care of the surplus water from flooding of creeks used as portions of the main canal. The settling basins are designed to retain the sand and gravel carried by the floods of these creeks which are from time to time removed by opening the scouring sluices provided for in the same structures.

Other main canal and lateral structures include lateral headgates, turnouts, railroad and highway bridges, bull-cart crossings, checkgates, flumes, siphons and other drainage crossings. To insure scientific distribution of water, provision has been made to measure the water in all turnouts and in all lateral headgates with a capacity of not greater than 1,000 second-liters.

The south unit consists of a main canal 31.6 kilometers long, and 174.4 kilometers of laterals and sub-laterals. There are 305 structures in all, in addition to the turnouts, which number more than 1,000. The work consists of 1,080,000 cubic meters of canal excavation, of 160,000 cubic meters of earth fill for the dyke, and of placing 5,200 cubic meters of reinforced concrete involving the use of 10,400 barrels of cement and 190 tons of reinforcing steel.

The north unit consists of a main canal 22 kilometers long and 115 kilometers of laterals and sub-laterals. There are 205 structures in addition to the turnouts, which alone number 660. The work consists of 680,000 cubic meters of canal excavation and 4,800 cubic meters of concrete containing 9,200 barrels of cement and 160 tons of steel.

Construction Work

Work on the project was divided into five units, as funds were not available in a lump sum for the greater portion or whole of the project, and work on each was started as funds were allotted and final designs prepared. In compliance with Philippine laws, every feature was advertised for bids, and the contract awarded to the firm or operator offering the most advantageous bid, usually the lowest. Only where reasonable bids are not received or expected is prosecution of public works done by force account in the Philippines.

Construction was started in January, 1921, when the contract for south main canal and distribution was awarded to the Atlantic Gulf and Pacific Company. J. B. Finley, an American engineer and contractor, handled construction of the diversion works, and Filipino contractors had the rest of the work. Work on the whole project was finished in July, 1926. Unfavorable weather and unusual floods interfered with completing the work on time.

The unit cost of excavating ordinary earth, the prevailing material in the main canals and in the distribution system, dropped from P.0.777 to P.0.42 per cubic centimeter. The former price was paid the A. G. & P. Co., for a great portion of the canal excavation of the south side unit and the latter figure is the average paid for canal excavation of the north side unit. High wages prevailing in 1920 account for the higher contract price, which was considered reasonable at the time. Later, wages dropped. Cement prices also went down after 1922. Wages of common labor on the project ranged from P.0.80 to P.1.20 for a nine-hour day.

All the surveys, preparation of plans and the supervision of construction was handled by the irrigation division of the Bureau of Public Works under the general supervision of Mr. Williams and the immediate supervision of Mr. Cortes.

According to data prepared January 1, 1928, the irrigated area of the Angat project is just 22,000 hectares; the total cost of construction was P.5,000,000; the cost per hectare was P.229.47; the annual irrigation charges per hectare are P.15.11, and those benefited by the construction have 40 years in which to pay off the total debt of construction, with interest at 4 per cent. Control and management of the system will remain under the Bureau of Public Works until the debt is paid off, then it will be turned over to

the water users after they have organized an irrigation community in accordance with provisions of the National Irrigation Act.

A Note of Opposition

This Angat project can fairly well be considered as a model for all the irrigation work contemplated in the Islands. More work of a similar nature is planned for the future, and some of it is under construction now. While the Angat system was being built, the bureau's policy of irrigation was subjected to a severe indictment when recognized exponents of agricultural thought and advancement emphatically asserted that the function of irrigation is only to insure crops against draughts, intimating that the government irrigation program had failed in its primary purpose of increasing rice production. One of these agricultural leaders even ventured to contend that the millions of pesos spent in construction had been wasted.

This charge was ably answered in a paper read before the District Engineers' Conference in Manila, by Cortes, previously mentioned irrigation engineer.

"Regardless of their intrinsic merit, or the lack of it," said Cortes, "these public utterances carried the weight of authority, and sowed the seeds of unrest and discontent among the farmers. The government is now confronted with the possibility of spreading opposition to the development.

"The value of irrigation will be measured by what it will accomplish. Aside from other advantages, the government plan of irrigation aims to increase the productivity of irrigated lands during the rainy season and to make possible the raising of auxiliary second crops in the dry season. This first aim is attained owing to the combined agency of three factors. It supplies the deficiency in the amount of water needed for the nourishment of the rice plant, which is not supplied by rainfall. It brings to the irrigated fields fertilizing matter through sediment carried by water diverted from rivers. And it gives the rice crop protection against many diseases, flooding having been found the most effective means for controlling and exterminating rice pests.

"It is an established fact that rainfall in the Philippines does not satisfy the water requirements of rice. In the administration of irrigation systems, the Bureau of Public Works delivers water to the farmers not only during the droughts but also during the rainy years, without interruption. Water deliveries are stopped only during storms and are resumed two days thereafter.

What Irrigation Does

"What irrigation does for the lands during the rainy season is no longer in the domain of the speculative, it is a living actuality. A careful scrutiny of production records of lands served by government irrigation systems has clearly demonstrated that without changing the native varieties of rice and following the old methods of cultivation, irrigation has increased the yield of rice fields from 17 to 25 or 40 to 70 cavans per hectare. The yield was, as a result of irrigation, increased 50 per cent. to 200 per cent. over the original.

"The abundant returns from irrigated lands as shown by these figures explain why irrigation has been practised in the Islands for centuries without government encouragement and aid, and why the construction of irrigation systems through private initiative and enterprise has continued with increasing vigor. More than 300,000 hectares of land are now under more or less dependable irrigation.

"Those who have observed how Chinese gardeners raise vegetables have noticed the tremendous amount of labor they spend, carrying on their shoulders kerosene cans full of water to irrigate crops even during the rainy season. Experience presumably taught them that rainfall is insufficient to satisfy the water requirements of garden truck. It is needless to add that if rain fall is not adequate to raise vegetables, its utter insufficiency to grow rice, a semi-aquatic plant, is manifest.

Dry Season Benefits

"What irrigation does for the lands is not confined to the rainy season. It makes possible the raising of a second crop of mongo, vegetables, tobacco, corn and so on in the dry season. It is a fact that except in low places crops suffer extremely during the dry season without some form of irrigation. This is particularly

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Making New Motor Car Tires From Old

Nestler Rubber Fusing Process in China and the Orient

By W. D. Tam

THE present day tires for the motor cars have always played one of the biggest part in the motoring cost. Thousands, in the principal cities of the world, are annually thrown away on the junk pile; because in a majority of cases the cords have begun to show or three to six pounds of rubber have worn off the tread of the tires. This waste is almost criminal. The automobile tire of to-day consists of a strong "carcass" made up of many layers of cords, made of the world's finest cotton—Sea Island Cotton—impregnated and held together by fine quality rubber. Unless the tire is abused through careless driving or careless inflation, all the wear is taken on the tread of the tire. The rest of the tire is practically as good as new. The cost of rubber worn off the tread of the tire, up to the time it is generally discarded, represents only about 15 per cent. of the cost price of the tire. 85 per cent. of the cost of the tire represented by the "carcass" which is junked.

The problem to eliminate such waste and to utilize these worn off tires have occupied the attention the best mind of the trade for many years. The difficulty has been largely the difficulty of joining new rubber to the old in such a way that it will stick. That is a positive joint between rubber and rubber such as fusing or welding, could not be produced.

After a number of years of research work, the Nestler Rubber Fusing Co., Inc., U.S.A. in 1920 has perfected a revolutionary process, known as the Nestler Rubber Fusing Process, by which all type of worn off pneumatic tires may be renewed in quality, appearance and in service. The process has made tremendous progress in

America and has revolutionized the tire servicing industry. With this process vulcanized rubber can be returned to an unvulcanized or raw state without removing it from the tire. When the tread rubber on the tire is treated by the Nestler Rubber Fusing process it is returned to practically the same condition as before it is cured or vulcanized by the tire manufacturer. That is to say the surface rubber is decured, obviously if new uncured rubber is pressed on

the de-vulcanized surface and the two then vulcanized or cured they will flow together and combine just as any two piece of uncured rubber under pressure will flow together during vulcanization and become one.

In producing new tires from old by this process, the old worn tires are first gone over thoroughly both inside and outside for signs of carcass failure. If after inspection the carcass is found strong and sound, a coat of de-vulcanizing compound, a non-inflammable and non-explosive liquid, is painted on the tire where de-vulcanizing is desired with a brush. The compound under the influence of heat penetrates very rapidly and has the effect of de-vulcanizing the rubber to a depth of about one-eighth of an inch.

The blue flame of a special torch is passed over the coat of de-vulcanizing compound. The compound immediately disappear and then a char forms on the surface. The torching does not injure the tire in any way. The purpose of the torching is to heat the compound. The tire is hardly warmed. With a special scraper, this char is scraped away. The rubber under the char will be found de-vulcanized. It has become soft and tacky. It is exactly like fresh uncured tread rubber.

The fusing compound which is

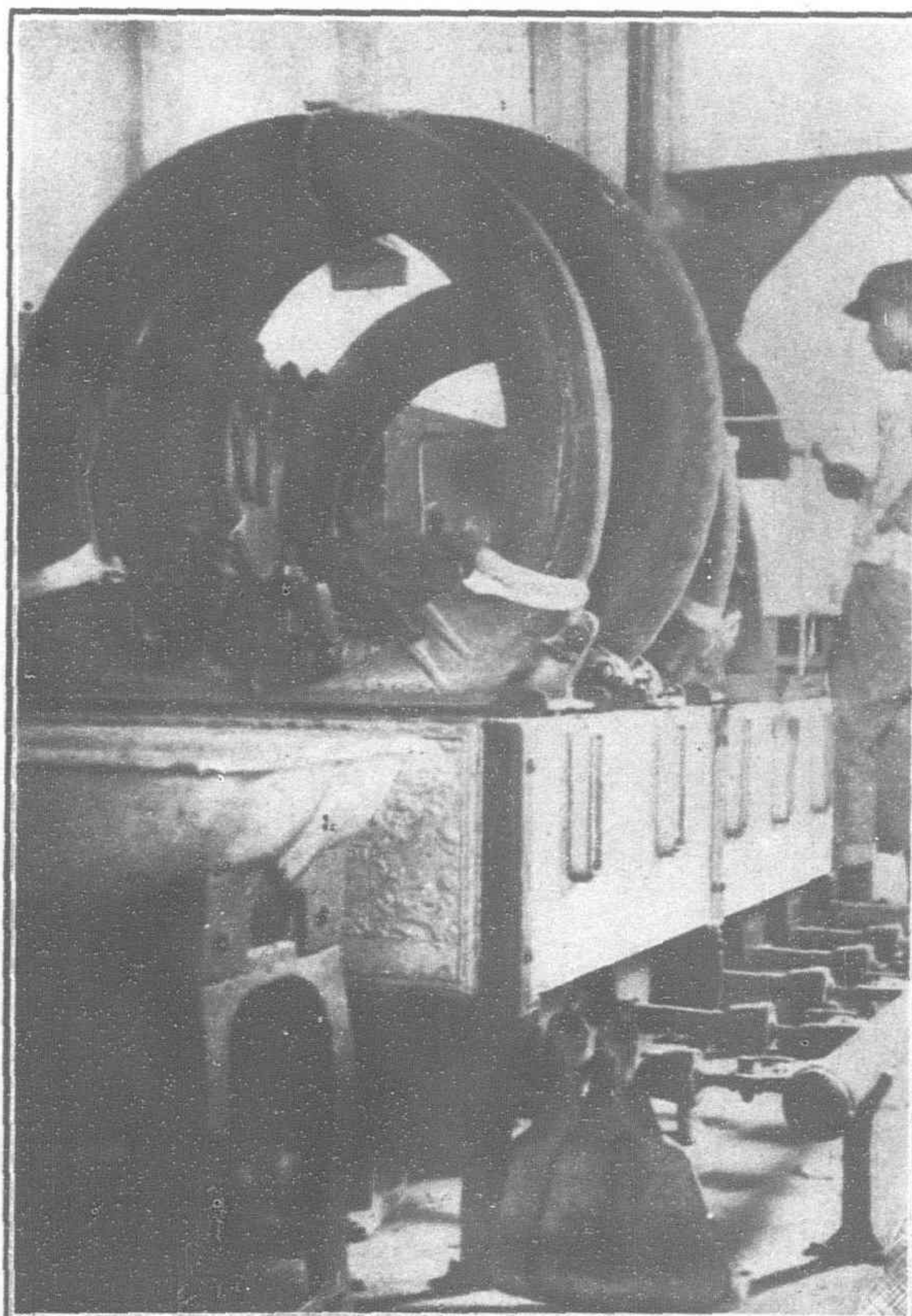


Fig. 3.—A Section of the Hongkong Nestler Plant

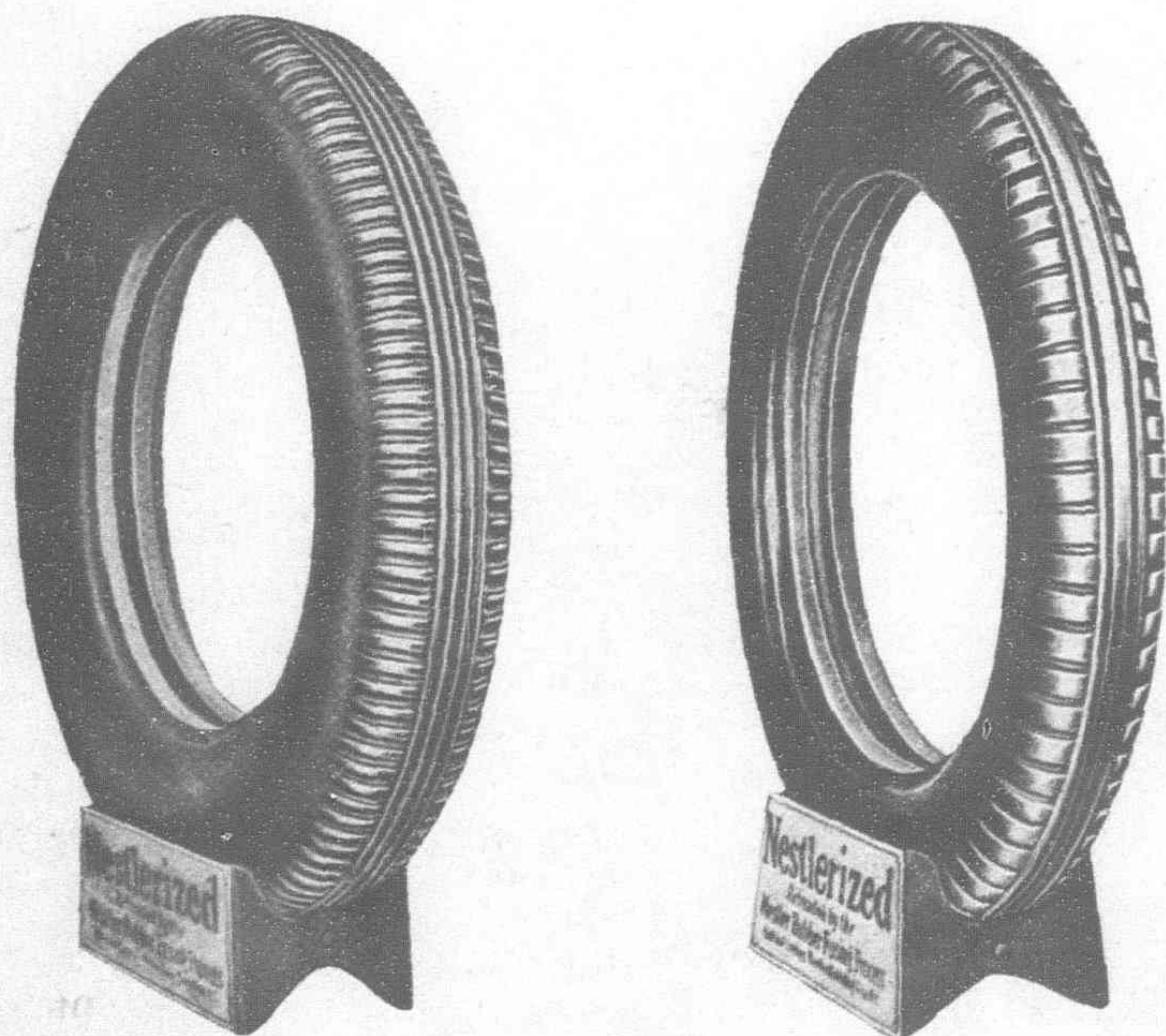


Fig. 1.—Two Tires Renewed by the Nestler Rubber Fusing Process

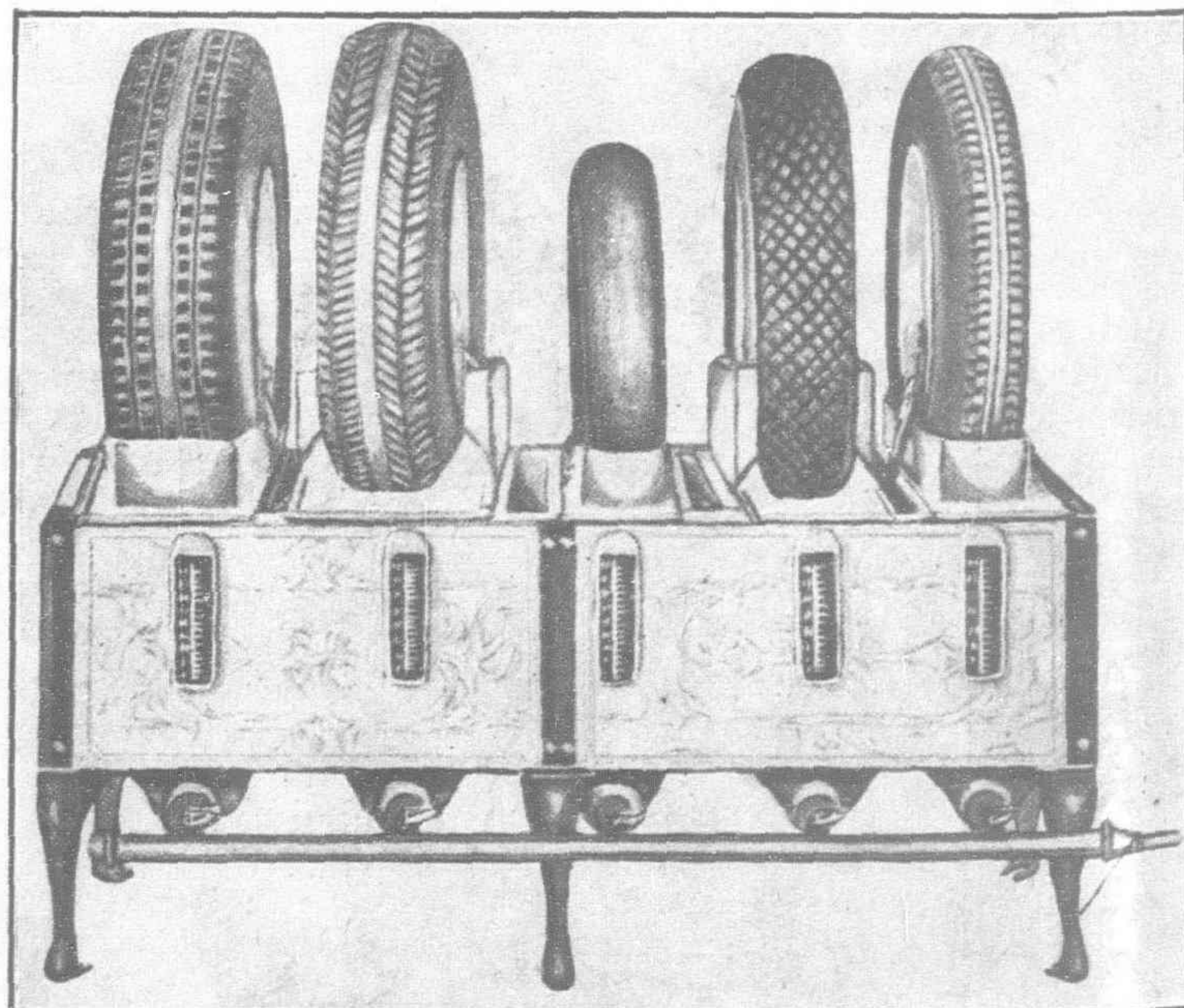


Fig. 2.—Nestler Five Mold Steamless Adjustable Curing Cabinet



Fig. 4.—Cross-Sections of Tires which have been Treated by the Nestler Process Showing no Deformity

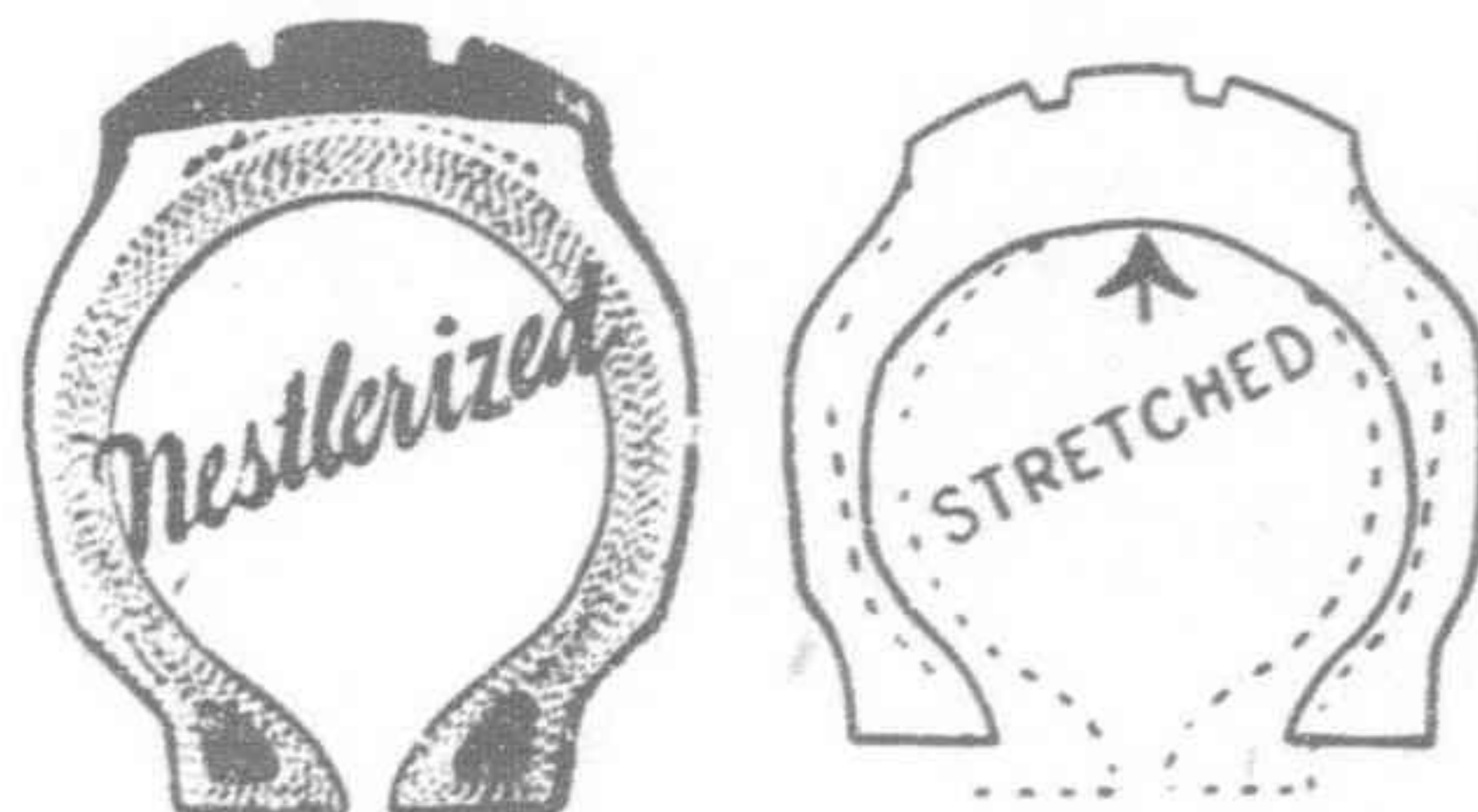
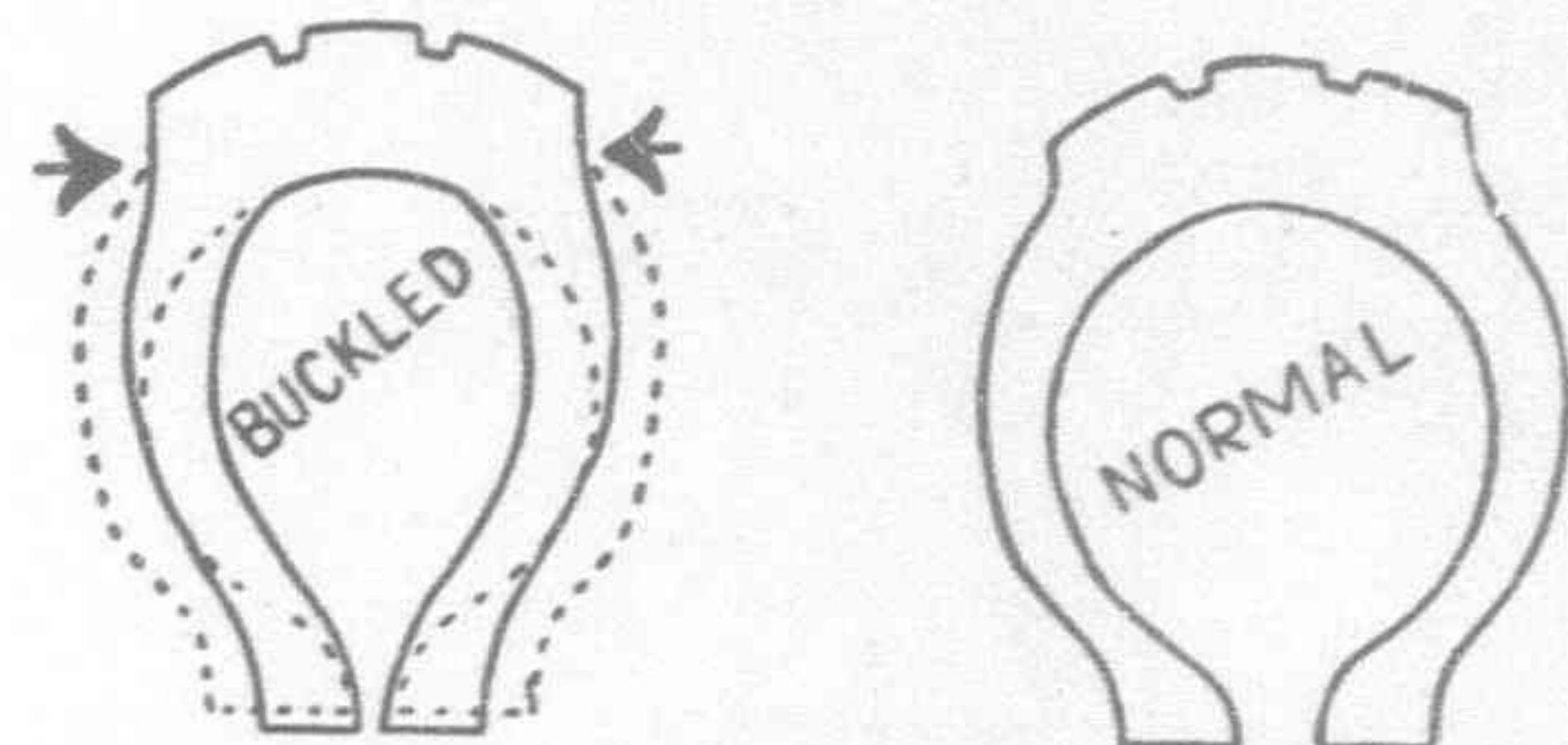


Fig. 5.—Cross-Sections of Tires which have been Stretched or Weakened by other Process



also non-explosive and non inflammable is now applied to the de-vulcanized rubber with a brush. No time need elapse for drying. Immediately after the fusing compound has been applied the tire is ready for the new rubber. The new rubber is applied in the form of "camel back" which is tread rubber already formed into the approximate width and thickness of the tread of the tire.

After the new rubber is on the tire a sand bag is inserted into it, then the Nestler clamps are applied and tightened, thus molding the soft, uncured rubber into the non-skid design of the adjustable mold. The clamping is done away from heat.

The curing of the tire is the last operation. The tire in the mold is removed by a trolley, hoist and tire carrier to the curing cabinet and heating is commenced to fuse the two pieces of rubber. The time and temperature are regulated and after a certain length of time the new rubber is fused to the old. Actually they become one. It is as you poured melted butter on hard butter. The melted butter will melt some of the other and on cooling the two will be one. The fusion is permanent. If torn apart the tear is no more apt to follow the line of demarcation between the old and new rubber than elsewhere. In fact the line has been obliterated.

This is the Nestler Rubber Fusing Process in the nut shell. It involved first a de-vulcanization of the surface rubber on the old tire; second, the addition of enough new uncured rubber to restore the tire to its original condition; and third, the re-vulcanization of both the decured surface of the tire and the new uncured rubber when they will flow together and combine into one solid mass.

The new process with its steamless, adjustable equipments produce what is practically a brand new tire. It looks new and have a smart non-skid tread. Fig. 1 shows two tires after being treated with the process. Nothing can happen to the new NESTLERIZED tire except those things which happen to a new tire. The new tread is formed of the same tough durable rubber that form the original tread and will wear just as long.

The main factor which makes the process so effective is the use of the Nestler Steamless adjustable equipments together with Nestler chemical compounds, the latter to produce the de-vulcanizing and fusing results. The most important equipments being the curing cabinet, the various molds and the clamping-outfit.

The curing cabinet is equipped either with gas, oil or electric heating elements, and produces what is call a floating dry heat. The method of heating thus dispense with the dangerous and explosive steam. Fire hazards

are eliminated, permitting the operation of the Nestler plants anywhere, without the stringent restrictions placed on ordinary vulcanizing equipments. In addition the floating dry heat produces and automatically maintains a correct curing temperature.

The steamless curing cabinets are made in four sizes, namely the two, three, four and five mold types. All the cabinets are divided into individual adjustable compartments, each fitted with separate heater and thermometer, thus allowing a more direct heat to be applied to each mold and permitting the heating of only those compartments which are actually in use, which means an enormous saving in fuel. In fact through exhaustive test, it has been found that the cost of operating this steamless curing cabinet is fully 50 per cent. less than any steam tire servicing plant. The simplicity of the sectional, steamless and adjustable curing cabinets make them fool-proof and their rigidity of construction assures long wear. Fig. 2 illustrates the Nestler Five Mold cabinet, and Fig. 3 shows a section of the Hongkong Nestler Plant in operation.

Like the curing cabinet the Nestler retread and repair molds have numerous advantages and improvements, that make possible finished NESTLERIZED tires of excellent wearing qualities and appearance. One of the outstanding features is the use of adjusting centers between two halves of the molds. This makes a single Nestler mold equivalent to seven or more non-adjustable molds, representing an enormous saving in equipment. Fig. 4 shows cross-sections of tires when new, worn and after being treated in the Nestler adjustable molds. It will be noted that the tire retains its normal shape and is not weakened in any way. Whereas illustration in Fig. 5 shows how easily tires are stretched or buckled when ordinary non-adjustable molds are used. The dotted lines show the normal shape of the tire and arrows point to parts that have been weakened, making the tire easily susceptible to blow-outs.

The adjustable retread molds are made with non-skid design. This design is part of the mold itself and not a separate matrix placed inside it. Due to this there is nothing to intercept the flow of heat required to produce a perfect cure. The retreading surface

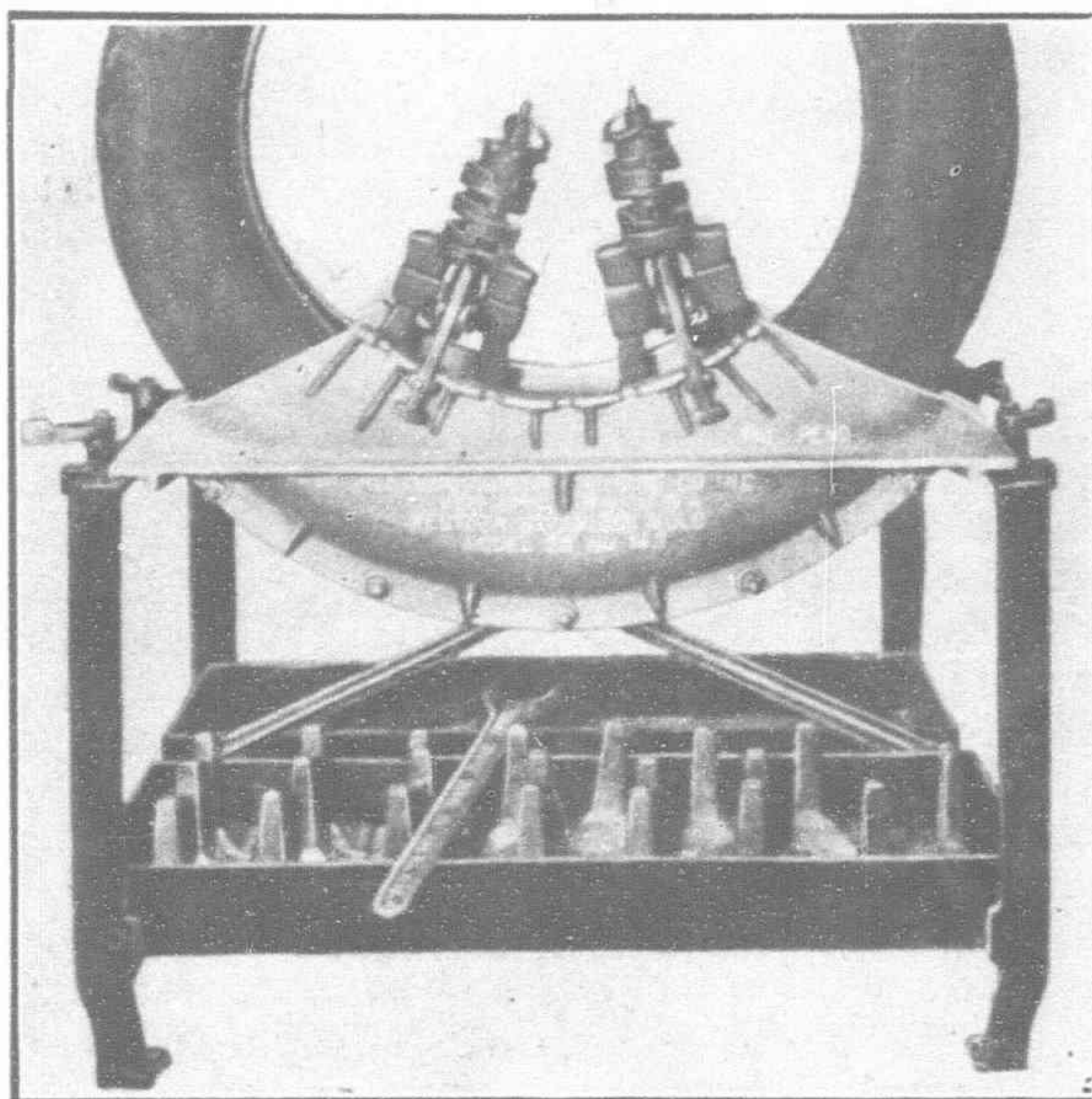


Fig. 6.—Nestler Clamping Stand



Fig. 7.—Clamping Operation in the Nestler Plant at Hongkong

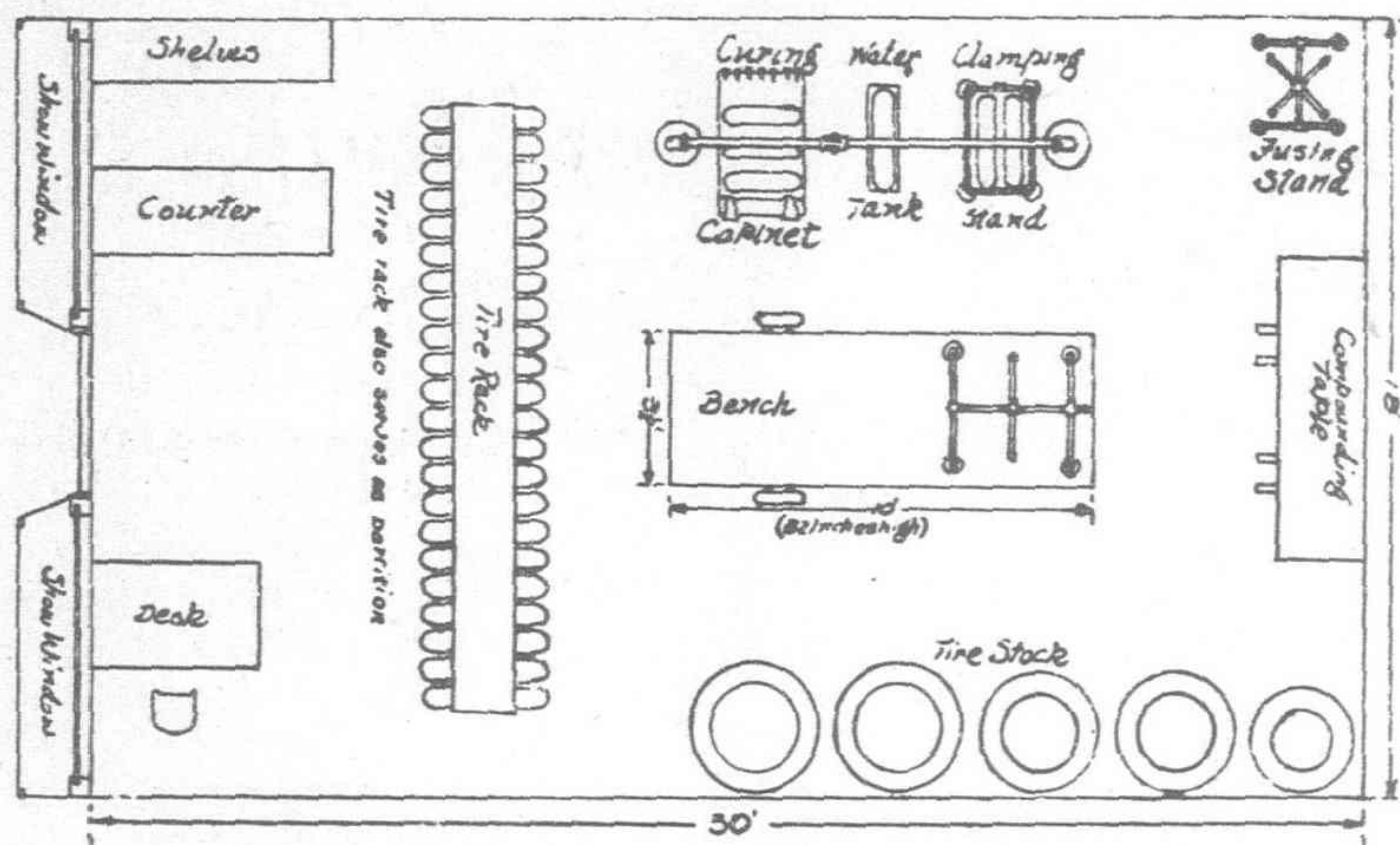


Fig. 9.—General Layout of the Nestler Plant

is highly finished by a special enameling process which makes the molds rust-proof and assures smooth clean products.

The clamping outfit with which pressure is applied to the tire has been developed to a highly efficient state. The clamping stand is strongly constructed for hard service and of the proper height for rapid and efficient operation. A tray is provided at the bottom of the stand as shown in Fig. 6 for keeping the clamps, pressure feet, and tools. Slots are also provided at both ends of the clamping stand to allow for the insertion of hooks to hold the mold firm and prevent it from sliding off while pressure is being exerted. Figure 7 shows the clamping operation in the Hongkong Plant.

The clamps themselves are strongly constructed in every detail and have seven adjustments to fit any sizes of mold. The pressure feet are scientifically designed to give long wear, maximum strength and pressure on a given surface.

Fig. 8 shows the various equipments and the method of hand-

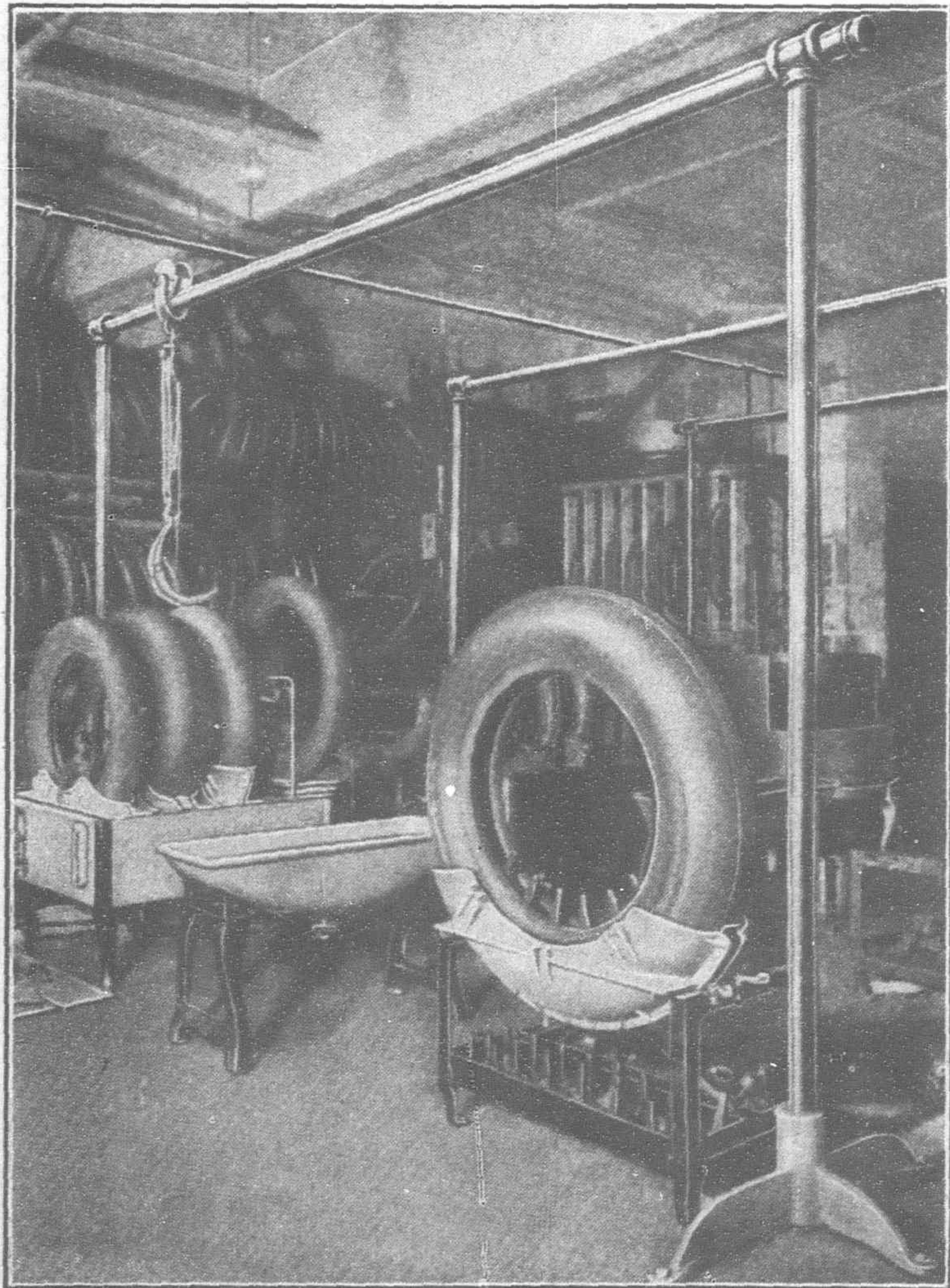


Fig. 8.—Nestler Plant Showing the Handling Equipment

ing the molds to and from the curing cabinets, clamping stand and cooling tank. Here the trolley, hoist and tire carrier play the most important part. The general layout of the plant is shown in Fig. 9.

After some lengthy negotiation the China Rubber Tyre Co., Ltd., of Hongkong has succeeded in securing the exclusive right to sell and operate the process in China and the Orient. Their Hongkong and Shanghai Plants are fully equipped with the most up-to-date equipments and are sample of the process in operation. These two plants can handle tires of every sizes and the business have been very successful from the start. Plans and negotiation is now under way to open up similar plants in Tientsin, Hanoi, Manila and Taihoku. It is anticipated that with the rapid and amazing growth in the number of automobiles in China and the Orient, the process will find beneficial service among the various motor bus lines, garages and motor car owners.

Venice in the Rice Fields

(Continued from page 325.)

true in the western part of northern Luzon, central Luzon and Panay Island, where government irrigation systems are located.

"Irrigation creates, in the land served by these government systems, a new industry, the raising of a dry season crop. From this second crop it is anticipated that the landowners will eventually derive at least half of the income they obtain now from rice crops raised during the first growing season. Irrigation will thus materially increase their earning capacity and better the standard of living.

Incidental Advantages

"Aside from the many economic, agricultural, and social advantages already mentioned there are many others that may be derived from irrigation construction.

"The construction of irrigation systems involves usually the improvement of roads and bridges in the irrigated districts, the development of river control works that safeguard urban and rural properties against damage or destruction by floods, and in some cases the generation of electrical energy for the lighting of towns and for use in industry.

"Local business is benefited directly by expenditure of big sums of money. Local industries, particularly the Cebu Portland Cement Company, various lumber companies, hardware dealers and contractors secure an important share of the business. Highly trained men as well as laborers find gainful occupation in irrigation construction and operation. There are more than 8,000 men that annually find employment in the construction and operation of irrigation systems.

"To the farmers benefited by government irrigation systems is extended engineering and agricultural advice calculated to help them to secure from their lands the greatest possible returns. The operation and maintenance force of systems placed at their doors the best information that the results of research and experiment have to offer in the most suitable varieties of seed to grow and the most effective methods of cultivation, harvesting and marketing.

"As to problems that in the future may arise in connection with the construction and operation of irrigation systems, we must with humility admit that some of them will tax the capacity of engineers to the limit, for the confines of irrigation engineering are still narrow and the science is still very young, although as an art it is old, as many passages in the Bible indicate.

"Nevertheless, there is no room for any apprehension as to the outcome of future problems. The success that attended past efforts is sufficient ground for the Bureau of Public Works to look at the future with calm and optimism. Plenty of inspiration may be found in the achievements of irrigators in central and northern Luzon, men who have had no technical training at all."

Such is the brief for irrigation and the program undertaken, by the Insular Government of the Philippines. The government is repaid both in fact and in theory, for in addition to the payments in money made by the farmers benefited, there is the tangible satisfaction in watching the increase of business, the influx of capital, betterment of general conditions, and the raised standard of living among the natives of the Islands.

Rubber in the Netherlands East Indies

By A. Suytges, Forest Engineer

THE opinions, which lately appeared in the press with regard to the world production of native rubber are very much divided, which is partly explained by the fact, that it is hardly possible to obtain a clear view of the great variety of questions which refer to the position of this article.

Some of the most important, which were outstanding features for discussion may be summarized by the following items, viz. the increase of rubber consumption, the flight taken in the manufacture of regenerated rubber, the rubber restriction and the future yield of native rubber.

As far as the latter is concerned, the Department of Agriculture, Industry and Commerce, in co-operation, with the Native Rubber Investigation Committee, has published a series of pamphlets, of which the latter has dealt in a fairly complete manner the flight which native rubber is expected to take in the near future.

Whereas, in spite of what is said in these publications, several articles yet continue to attach but minor importance to a possible further increase in the production of native rubber, we consider it a duty once again to take up this subject and to warn persons interested in rubber affairs against a too optimistic view of the problem, which is by no means justified.

The graph published here is intended to give a surveyable picture of the development of native rubber industry. With this object in view the following items have been brought into particular evidence:

- the course of prices in London of Hevea Standard Ribbed Smoked Sheets from 1911 to 1927 (borrowed from Wynand and Keppler);
- the production of native rubber from 1919 up to and including 1927, mentioned in tons dry weight, with the proviso that the data for 1927 should be considered as a preliminary valuation;
- a diagram of the extent of the planted area since 1910; it stands to reason that the latter is by no means conclusive, as hardly anywhere gardens have been measured. Figures giving the areas are likewise merely the result of a rough calculation, viz. by first taking the number of trees producing from the proportion between the average production per tree (4 Gr. dry per day—about 1 Kg. dry per year, on market—or rainy days trees are not tapped) and the total productive capacity of the Netherlands East Indies (about 95,000 tons dry yearly), the result being 95,000,000 trees. However, owing to the closely planted native gardens (in an average 800 trees per H.A.) about 25 per cent. result in

failures, consequently no more than 600 trees are left per H.A. This is the basis for calculating the present productive area, the result being approximately 160,000 H.A.

From a personal investigation and numerous communications, it was inferred that the planted area was 3 to 4 times more extensive than the producing area, from which the conclusion should be drawn that the total area covered by native rubber actually includes some 500,000 to 600,000 H.A.

Although this calculation is a mere outline, yet it gives a fairly distinct picture of the flight taken by this cultivation.

Between 1900 and 1910, when the cultivation of native rubber was still in its prime, the native population used to plant a few rubber trees here and there, naturally this cultivation was of little significance. However the favorable rubber quotations which ruled the market from 1910 up to and including 1912 did not fail to draw the attention towards this product, with the result that during that period, well-to-do natives in several parts of the archipelago started laying out rubber gardens on an extensive scale, providing themselves with Malacca seeds and seedlings. However this enthusiasm subsided ostensibly as prices began to crumble in 1913.

Towards the end of the year 1915 prices improved, the gardens which had been laid out between 1910 and 1913 started producing, yielding favorable returns which awakened a general interest for this cultivation. Besides, seeds and seedlings could now be obtained in a much easier manner from existing gardens. Another factor which was to the advantage of native rubber cultivation was the discovery that laying out of new gardens combined with the usual system of planting on cleared forest patches demanded very little capital and very little labor.

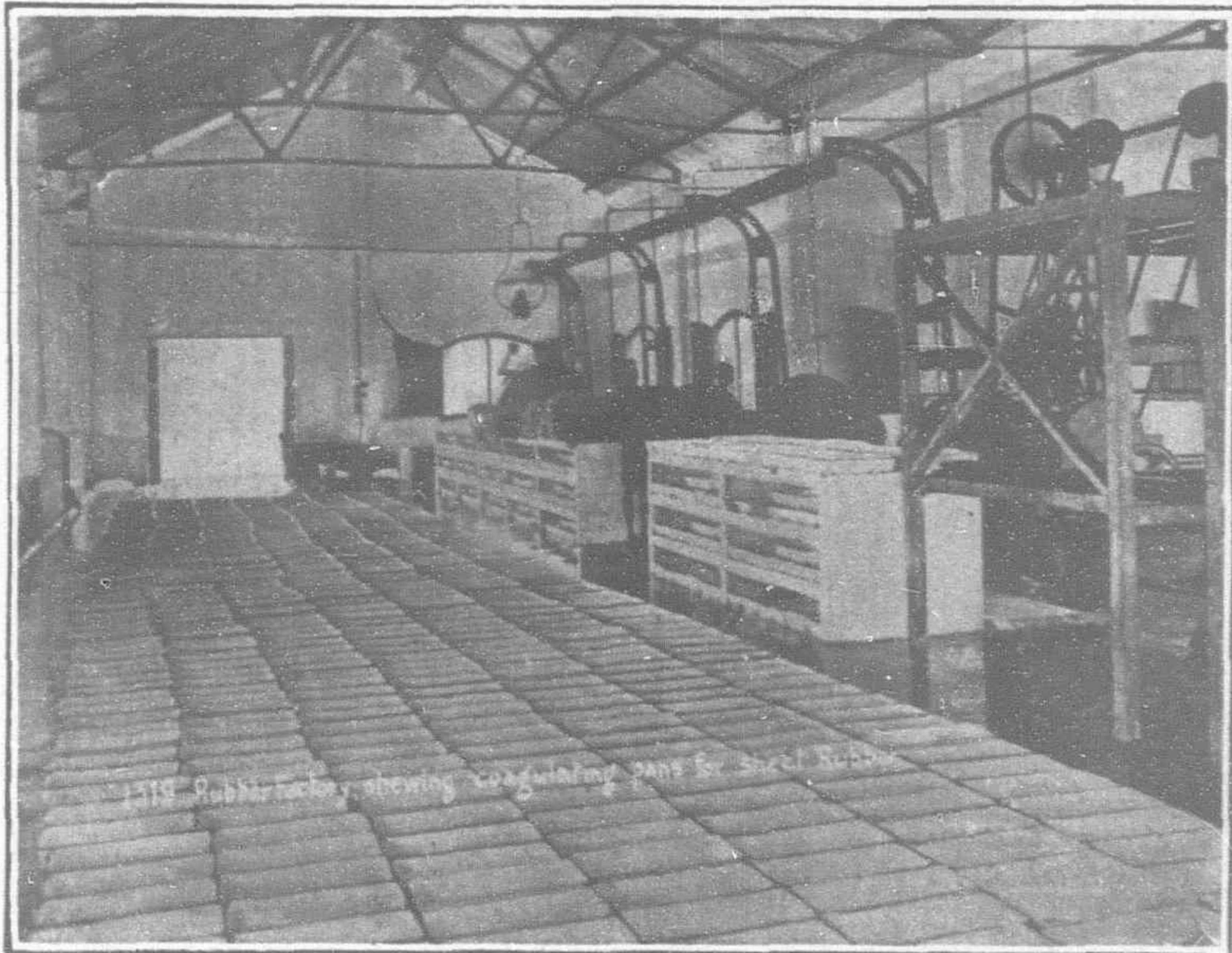
Consequently, from 1916 onwards rubber planting has developed into a regular native cultivation which extended rapidly, especially in Sumatra and Borneo. Owing to the near vicinity of these islands to the Malacca peninsula, the population in no time adopted the feverish haste in planting rubber trees with which their neighbors were possessed.

The slump which prevailed in 1920 inevitably had a detrimental effect on native rubber cultivation, the product could scarcely fetch a price, with the result that the discomfited population ceased altogether adding new trees to their plantations. During 1921 and 1922 as well, the gardens hardly underwent any further extension.

However the recovery of the rubber market towards the end of the year 1922 caused the people once more to regain confidence in this product; during the season 1922-1923 the area was again extended, while the following year this extension was continued on yet a more important scale. Owing to the exorbitant prices which



Rubber Packing Shed



Rubber Factory, Shewing Coagulating Pans for Sheet Rubber

then prevailed, the population got possessed by a regular mania for planting rubber; every part of cleared land situated in rubber districts was transformed into a rubber garden, with the result that during the last few years the cultivation has undergone a considerable extension. Whereas during the slump the planted area covered some 160,000 H.A., the actual area planted with native rubber will measure no less than 5 to 600,000 H.A.

When studying the general trend of exports next to the extension of planted areas, the increased exports, as a direct result of increased cultivation, constitutes a striking feature. A native rubber garden is tapped after 4 or 5 years, consequently the gardens laid out between 1916 and 1920 have started producing between the middle of the year 1920 and 1924. When taking into account that during the years 1920 and 1921, owing to low rubber quotations, tapping was done on a very moderate scale and that the production of thickly planted rubber gardens continues to increase for 7 or 8 years, the narrow relation existing between producing areas and figures giving the export traffic is evident. As a matter of fact, this direct connection is likewise apparant when considering that after the year 1925, the exports of rubber have ceased to increase to any considerable degree, which was a direct result of the circumstance that rubber gardens were neither extended.

Throughout the following years, the gardens which have been laid out from the middle of the year 1923 onwards, will start producing. Consequently, the production is expected to increase considerably after 1928, to such an extent even, as to render the area under native rubber within 4 or 5 years three to four times larger than it is in its present state.

However we should not commit the error to suppose that exports will increase in a similar way, owing to factors such as the limited number of hands available and the influence which market quotations exercises on the export traffic.

But before discussing the influence of these factors, it would be useful to make allowance for a slight digression in order to consider the possibilities of labor recruitment and labor conditions, in particular in the provinces of Palembang and Djambi:

In Palembang the number of tappers is yet sufficient to tap the entire productive area every day. When taking as an average a quantity of 4 Gr. of dry rubber per tree and per day and a task which includes 350 trees, the daily production per tapper will amount to 1.4 Kg. of which 0.7 Kg. represents his wages.

In Djambi a shortage of labor does not allow the trees to be tapped every day, so that tapping at irregular intervals is applied. When keeping account with the above circumstances and taking as a basic production per tree 6 to 7 Gr. besides a task including 350 trees, the production per coolie and per day will be 2.1 to 2.45 Kg. while 1.05 Kg. to 1.225 Kg. will represent his wages.

It stands to reason that the above is merely a rough calculation, however the principle is a correct one and explains the existing facts, viz. the higher rates of wages prevailing in Djambi as compared to Palembang.

Thus we have been in the opportunity to state that in Djambi the daily yield per tapper and consequently his wages are more important than such is the case in Palembang, so that a tapper in Djambi will be able to continue working at a lower price-level. Besides the Djambi gardens in general, owing to a more economical use of bark reserves, will be in a more favorable condition than those in Palembang.

As far as the recruitment of labor is concerned conditions on the West Coast of Sumatra, Tapanouli and the whole of Borneo are similar to Palembang while those prevailing in Indragiri and the southern part of the East Coast of Sumatra are about the same as in Djambi.

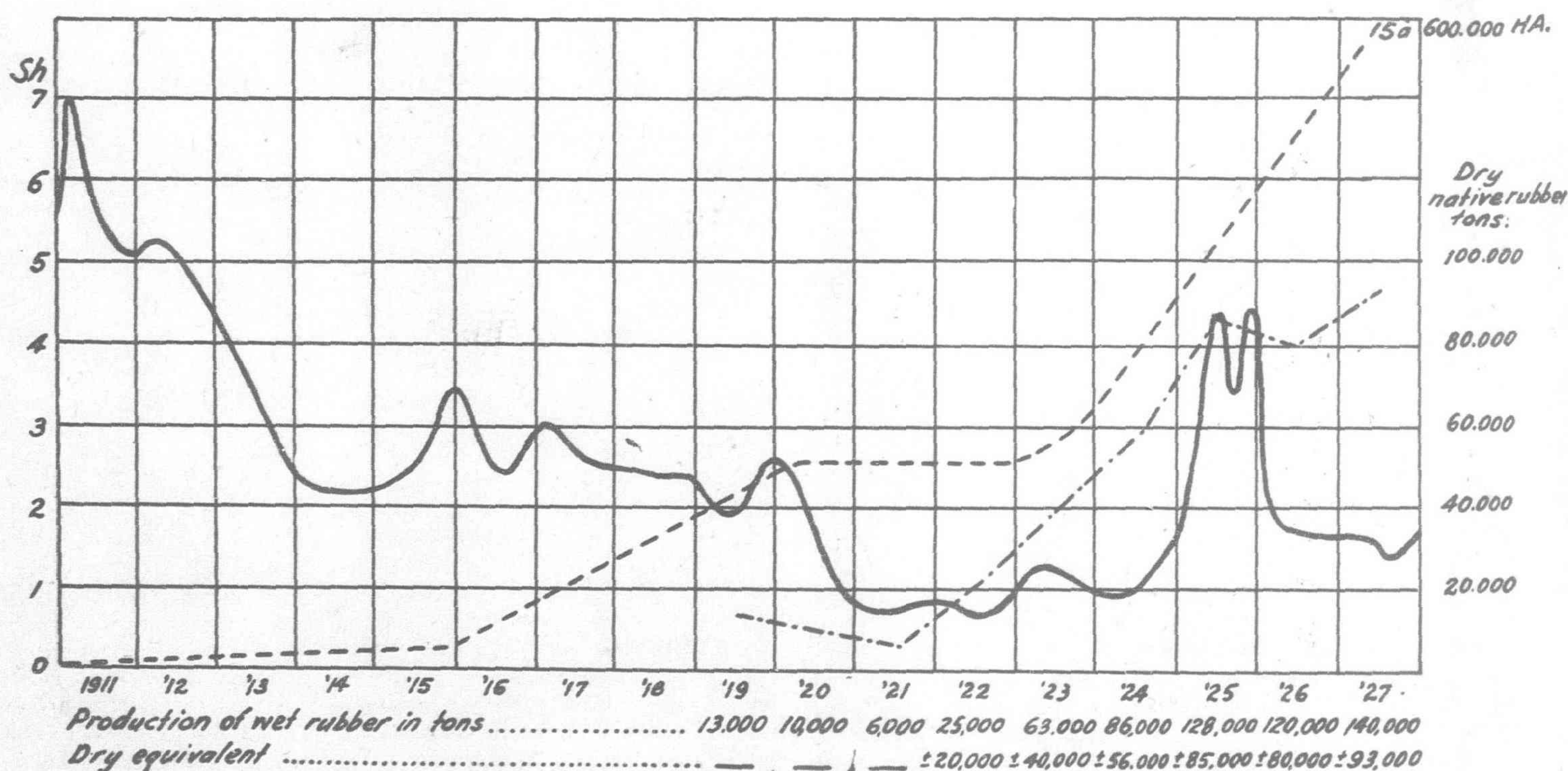
When after this digression we return to our diagram, it may be observed at a glance that after 1928 the producing area will extend considerably. When taking it for granted that the quotations will maintain their level viz. from gld. 0.90 to gld. 1.—per 1/2 Kg. a considerable increase in exports is expected from 1928 onwards, which will grow in importance throughout the following years.

In the provinces where daily tapping is applied, owing to the increase of trees which have reached sufficient maturity to allow this operation, the production will first increase until the limit of the labor market has been reached; when the productive area will have yet augmented, tapping at irregular intervals will be applied, with the result that with the same number of hands a considerably higher yield may be obtained. According to this system the production per coolie as well as his daily wages will increase, no doubt adding to the attractiveness of the work and facilitating the course of labor.

In those provinces where irregular tapping is generally applied, this system could be improved, while laborers will show a tendency

(Continued on page 332).

— Course of prices in London of Standard Sheets
 - - - - - Production of dry native rubber
 - - - - - Area under native rubber (in diagram)



A New Steamer on the Singapore-Australia Run

THE Royal Packet Navigation Co. (Koninklyke Paketvaart Maatschappij), which operates in the Netherlands East Indies, Australia and the Straits Settlements and is popularly known as the K.P.M., has just augmented her fleet with two new oil burning double screw steamers, the Nieuw Zeeland and the Nieuw Holland. They are the largest steamers ever built for this company and the last word in shipbuilding for the tropics. The Nieuw Holland is expected to leave from Holland for the Netherlands Indies around the 20th of May next, the Nieuw Zeeland passed Port Said on the 30th April, and arrived in Java on the 19th of May. Both these steamers are intended for the Singapore-Australia line and to anybody who has been on board one of these ships there can not be the slightest doubt that the luxury and comfort will soon obtain for them the reputation that they are the crack steamers of the K.P.M.

The Nieuw Holland was built by the Netherlands Shipbuilding Co. at Amsterdam, the Nieuw Zeeland at Rotterdam by the Rotterdam Drydock Co. according to the highest class of the "Bureau Veritas." The total length of both steamers is 559-ft., 5-in., width 62-ft., 6-in., depth when loaded 26-ft., gross tonnage 11,000 register tons, nett tonnage 6,750 register tons and displacement tonnage 18,000 tons. The Nieuw Zeeland is the largest passenger ship ever built at Rotterdam.

Both ships have been built of steel with a double bottom, divided into several tanks for the storing of water, oil and diesel oil, etc. The body has been divided into 12 watertight compartments including engine room, boiler room, five holds for general cargo, one hold for cold storage, and two bunkers for coal and oil. The ships have a glass-protected promenade deck, boat decks and a bridge deck. They are painted white and with the tall masts leaning slightly backwards, the two yellow funnels and the many boats (there are fifteen and one motor boat) they are both of an imposing size and structure and considering the long, slender lines of the body one realizes that they must be fast ships. That they are ships built for the tropics is evident from the large windows of both passengers and officers accommodation, the open space underneath the afterdeck, the many ventilators and sunshades.

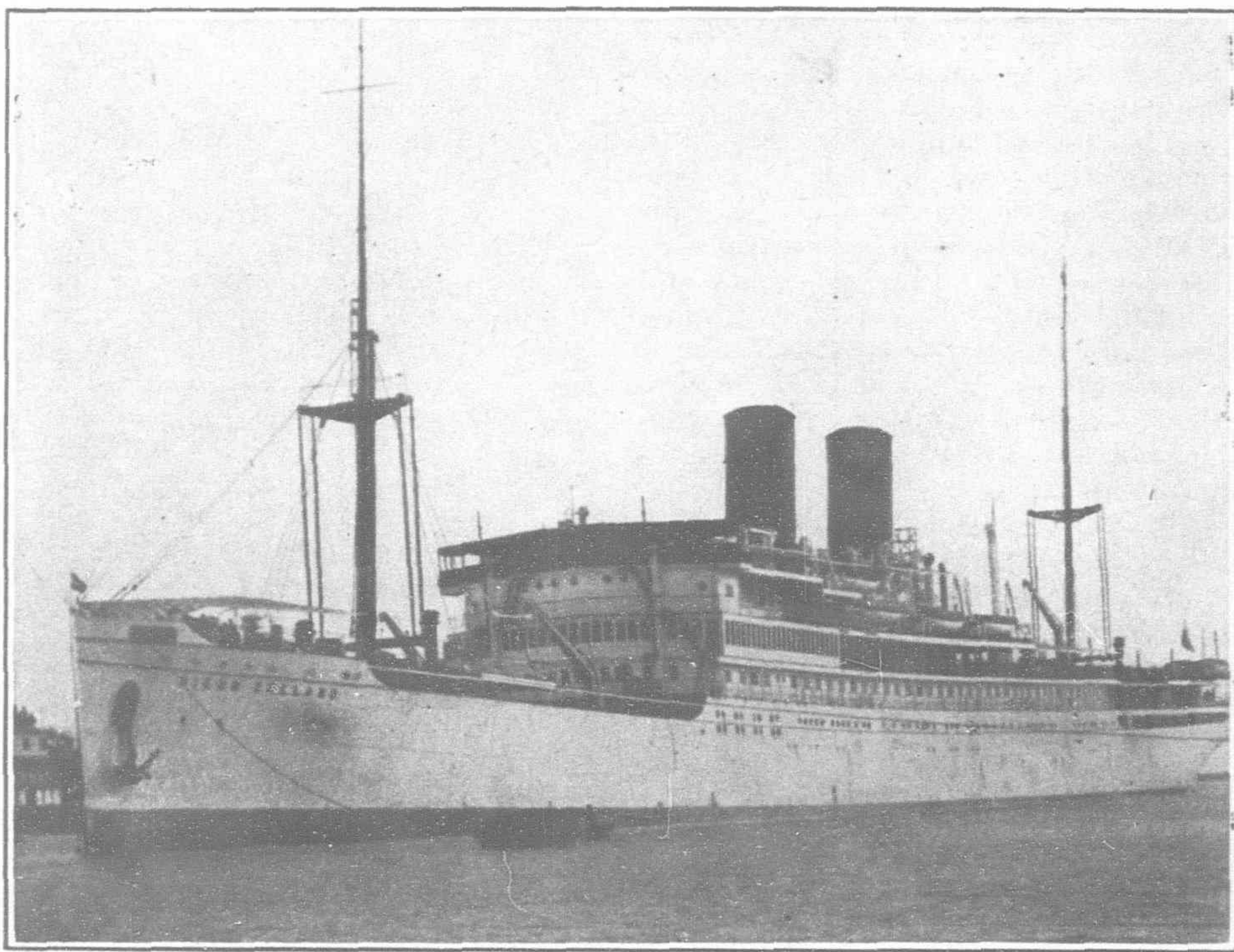
To handle the cargo there are several cranes and other devices operated by electricity so as to do away with the noise of loading and discharging and in addition this method is the most economical. All the other devices on the decks are also handled electrically. Throughout the ships runs a fire extinguishing installation, in which water, steam and sulphuric acid gas is applied to combat fire.

Now, for a short description of the Nieuw Zeeland, which will be the first of these steamers to take up the regular run between Sumatra-Singapore via Samarang, Sourabaya, Macassar to Australia.

Coming on board one enters first a hall on the tentdeck. Here are a wide flight of steps conducting to the saloons, and the entrances to the passages along the cabins and the purser's office. The paneling in the hall and along the stairways is of polished teak, extremely simple but tasteful. One stairway leads down to the dining room situated on the upper deck. It seats 126 first class passengers round 22 tables of various sizes. In both sides groups of four portholes have been let in so that light and air can freely enter. A whole row of portholes has been let in along the front. In the center of the ceiling is a large well surrounded by a balustrade. Behind the dining room and communicating therewith is the pantry and still farther back a kitchen and bakery, a butchery etc., all fitted out with the most modern appliances. Behind these, on port side are the service passage and the quarters for the civil staff, the servants, clerk's offices etc., as well as the entrances to the store and cold-storage rooms.

On starboard side right behind the dining room and connecting therewith runs a passage along 21 single and double berths cabins with 33 berths and five berths for children. Behind these cabins is the hospital including two cabins, an apothecary and a cabin for a nurse.

Behind these, in the hold there are 50 berths for third class passengers. On this deck are aft the accommodation for the laundry men, stable boys, the entrance to the accommodation for the firemen and trimmers as well as several baths and toilets. Between the third class and the last mentioned accommodation are removable box stalls for horses. Forward is the



The Nieuw Zeeland

accommodation for the deck crew.

Returning to the hall on the tentdeck one sees both on starboard and portside a long passage with 54 single and double berths cabins with 90 berths and six berths for children. All berths are lower berths, there are no upper berths at all.

There are two cabins de luxe opening on the balustraded passage round the well of the dining room. They have been panelled with polished teak and are fitted out with lits jumeaux, toilet and writing table, wardrobes, and safe etc. These cabins have a private bath and toilet and two marble washstands with hot and cold running water.

All the other cabins, also those on the upper deck have been panelled in white lacquered okoumé and are fitted out with polished teak berths, wardrobes and baggage nets. In the communicating doors between the cabins full sized mirrors have been let in. Every berth has a small reading lamp and every cabin a thermos bottle for ice water as well as an electric fan. All cabins are outer cabins with square double windows (no portholes). The passenger accommodation includes furthermore a barber-shop and gentlemen's and ladies' hairdressing saloon and a dark room for developing photo-

graphs. The purser's office is provided with a safe for the benefit of the passengers. Aft on the tentdeck is a deckhouse which accommodates the laundry and drying room.

From the hall aforementioned leads also a flight of steps to a hall on the promenade deck where a music room and a smoking room are located. At the back of the smoking room is the bar communicating with the former through a sliding window. The music room opens through wide, glass doors on to the roomy promenade deck, which affords sufficient space for all sorts of deck sports. For that purpose a gymnasium as well as a swimming tank has been provided. The latter is situated aft on the promenade deck and consists of a steel tank with tiled floor and marble slabs above the waterline. Around it runs a brass balustrade. The water runs steadily into the basin through a bronze lion head and is always fresh. An appliance has been provided to heat the water when in a colder climate.

Just in front of the swimming tank is the veranda cafe with bar. The gymnasium on the boat deck has been panelled with teak and provides for bicycle sport, rowing, the gentle art of self defence, etc. On the boat deck has also been built a deckhouse which contains the cabins and dining room for the officers and engineers and for the purser and doctor. Above the latter is the bridge deck with captain's accommodation and chart room. On the boat deck is furthermore located the wireless station and deckhouses for the fire extinguisher, etc.

The decoration of both these ships is a special feature and a few particulars follow about the decoration and panelling of the Nieuw Zeeland. The dining room is in white lacquer with white marble panels. The rest of the panelling as well as the sideboards and chairs is in red Andaman Padouk. Along the walls are tiled pictures of Indian and Australian fruit. These are exceptionally attractive. The four groups of portholes are lined with gold tiles. The ceiling shows a decoration of clouds. The open well balustrade has been executed in carved marble and reliefs. In the front is a design from Bali, on one side a figure from the Netherlands Indies and on the other an Australian sheep. On the various poles sculptured animals have been mounted. On both sides of the flight of steps leading to the wide sliding doors, are two tiled tableaux of orchids, and the panels of the doors are also decorated with orchids.

The smoking room has been panelled with teak with decorations of tiles showing Australian birds and plants. Above the windows are pictures of scenery in New Zealand.

The music room has a reddish panelling of Andaman Padouk, with panels of red Onyx Agate. The reliefs above the doors show the arms of Australia and New Zealand. Above the windows one sees again pictures of scenery in New Zealand, and on the front wall pictures of the products of New Zealand, fruit and sheep. The carpets have been manufactured in the well-known factories of Aubusson. It may be mentioned here that they have been woven of Australian wool and they show the excellent results which can be obtained with this first class material.

All the wood carving and sculptured work has been executed by the Dutch sculptor L. Zyl, and the panelling of the saloons, halls and balustrade has been designed by the well-known Dutch artist Lion Cachet, who has a world reputation as a decorator of ships' interiors.

Here follow finally a few technical particulars. The turbines for the Nieuw Zeeland have been supplied by the "Etablissement Fyenoord" of Rotterdam. Both steamers can run 15½ miles, but the ordinary speed is 15 miles. Each ship is provided with four boilers, type Babcock and Wilcox, with such a capacity that with only three boilers a speed of 14½ miles can be developed. The boilers use only liquid fuel. Four generators supply the required electric current for the many electromotors and the lighting, heating and ventilating, when steaming and two Diesel motors when in port. On board of each ship is an installation supplied by the Liverpool Refrigeration Co. which makes it possible to ship 500 tons of frozen meat under tropical conditions. This cold storage has been accommodated in a separate, isolated hold and is divided into a number of compartments.

Rubber in the Netherlands East Indies

(Continued from page 330).

to pick out the most productive gardens, thus yet increasing production in those districts.

Taking into account the above considerations, it is fairly

certain, if quotations maintain the same level, that production of native rubber will increase considerably within the next five years. It is even very likely that this production during said period will reach some 150,000 to 175,000 tons of dry rubber, while it is by no means unlikely that beyond that period the yield will reach even as much as 200,000 tons.

The influence exercised by rubber quotations on the production of native rubber is much more difficult to establish; generally speaking labor will feel attracted towards a high price, while a quotation which would yield unremunerative returns would at once result in lesser yields.

However, at which level the coolie would finally decide to abandon his work could not be made out here; this level being dependent on the condition of the money market in the interior as well as on the quantity produced per tapper. The more abundance of money, the higher the minimum price level will be, while in the case of a tight money market this level would drop accordingly. In 1922 in the midst of the slump, tapping was continued unrelentingly at a standard price of 7 d. On the other hand, during the early half of the year 1926, after the plentiful money market in 1925, work was temporarily suspended at a level of 1s. 8d.

The minimum price level will yet be able to decrease considerably in the future, whereas by introducing periodical tapping the yield per tapper, and consequently his wages, will be able to increase to no slight measure.

Summarizing, we come to the conclusion that the abated interest, which of late rubber trade has displayed for native rubber, is in no ways justified. On the contrary this cultivation yet bears all potentialities for further production and it is expected that the yield at the present price-level will yet increase from 150,000 to 175,000 tons of dry rubber within the next five years. In this connection the minimum price-level which would yet allow of further production could be diminished considerably.

Native rubber is actually entering upon a new phase, whereby the introduction of periodical tapping will greatly contribute to improving conditions prevailing in this line of agriculture.

It will however be eminently desirable to keep a watchful eye on this important source of production and to avoid dealing with this subject as if it were a matter of but secondary importance.

Regulations Relating to Patent Law in China.—By a ministerial order issued on March 10, 1928, the Ministry of Industries promulgated a set of detailed regulations governing the enforcement of the Patent Law, which contain the following important points:

The application for a patent right and the explanatory note attached thereto should be written in the national (Chinese) language and any foreign technical term therein should be accompanied by a translation in Chinese.

In the explanatory note should be stated: (1) the name of the invention or newly discovered, improved method of manufacture, (2) its purpose and scope, (3) its manufacturing processes and method of operation, if it is a mechanical instrument, (4) the name or names and place of production of the raw materials used in its manufacture and manufacturing processes, if it is a chemical product and (5) the scope and time-limit of the patent right applied for.

In case of the object for which a patent right is applied being a mechanical instrument, the applicant should accompany his application by the invented machine or a model, together with detailed illustrations; and in case of the object being a chemical product, discovered or improved, samples should also accompany the application.

Patent rights may be applied for by representatives.

Patent rights obtained by transfer or inheritance with the Ministry's (of Industries) sanction should be allowed the time-limit originally applied for.

Patent rights granted may be cancelled according to articles 9-11 of the regulations governing the examination and ratification of inventions.

In case of application for prohibition of imitations the applicant should give a detailed account thereof and submit the imitation articles in question for examination.

In the original application for a patent, or for one obtained by inheritance, the applicant should pay a fee of \$5, and, in case of application for one obtained by transfer, for a new one when the old one is lost or destroyed by accident, or for prohibition of imitations, the applicant should pay a fee of \$10.

Petroleum in the Philippines

By Leopoldo A. Faustino

THE Philippine Islands has not produced oil in commercial quantities. An insignificant amount has been taken from shallow wells and seepages, and has been used for lighting and medicinal purposes, but nothing approaching commercial production has been possible. The search for favorable structures has been more or less abandoned, at least temporarily, and all drilling leases have been surrendered to the Government. The failure of the Richmond Petroleum Company, a subsidiary of the Standard Oil Company of California, to strike oil in commercial quantities in Bondoc Peninsula, Tayabas Province, has had a very depressing effect on the industry. At the close of the calendar year 1925 exploration and development in all the more important oil fields were at a standstill.

The following are the localities known to contain oil and which are considered worthy of exploration and development:

Bondoc Peninsula, Tayabas Province. Toledo, Cebu.
Northwestern part of Leyte. Southern part of Mindoro.
Central Panay. Pidatan district, in central Mindanao.

The Tayabas oil field includes that portion of Bondoc Peninsula, Tayabas Province, south of the towns of Catanauan and San Narciso, or approximately the southern half of the peninsula. The extent of this field is indicated by seeps which are found in highly inclined strata. The petroleum occurs, associated with certain horizons, in an extensive series of beds of sandstone and shale (Vigo shale). The principal seeps are found in the upper part of this series, which is predominantly shale, but contains subordinate beds of sandstone.

Several shallow wells have been drilled in this field, three of which have produced petroleum in small quantities by pumping. These have never been pumped for any length of time, partly on account of lack of storage facilities, and it is not known how much petroleum can be obtained by continuous pumping, or whether enough petroleum is accumulating at the bottom of the wells to keep the pumps busy. It is claimed, however, that Banco wells Nos. 3, 4, and 5, which were drilled in 1918 and 1919, would probably average about one barrel a day. The first well drilled in Bondoc Peninsula was Bahay well No. 1, in 1906. Drilling was done entirely by hand power and reached a depth of 127 feet, and a small quantity of gas and oil was obtained. Drilling by modern methods was started in this field by the Richmond Petroleum Company in the early part of 1921. From 1921 to July, 1924, the company was able to drill four wells. These wells are the following, given in order of their depth:

	Feet.
Yebaan No. 1	617
Amuguis No. 1	1,323
Sapa No. 1	3,757
Pina No. 1	5,117

The Richmond Petroleum Company has drilled a total footage of 10,814. Slight indications of petroleum and natural gas have been encountered, but of oil nothing that even nearly approached commercial quantities was found under the structures tested. The company discontinued drilling activities in July, 1924, and has stored all its field equipment at Manila.

The Leyte oil field includes the extreme northwestern peninsular portion of Leyte Island, as far south as the barrio of Baliti, municipality of Villaba. The seeps are located on the upturned edges of the series of beds of sandstone and shale called the Vigo shale, as in Bondoc Peninsula, Tayabas Province. Residual bitumens are found in the overlying Canguinsa sandstone and have also impregnated the Malumbang limestone series which caps the Canguinsa. This field has never been tested by drilling, although favorable structures have been indicated. Some geologists claim that asphalt deposits of considerable amount indicate that the oils have already escaped; but, on the other hand, we have the case of the grahamite deposit of Ritchie County, West Virginia, in the United States, which occurs at right angles to the direction of the anticlinal fold that is productive of oil.

The Cotabato oil field is situated in the heart of Mindanao and covers an area of unknown extent in the Pidatan district, a short distance south of the Lanao-Cotabato boundary. The only indication of oil in this field is a single seep, which is located in a ravine on the headwaters of Kirusoy Creek, a tributary of Malitubug River. The

small amount of oil and gas issues from what appears to be a contact between basaltic igneous rock and agglomerate. An analysis of the oil showed no light constituents such as gasoline, benzene, and kerosene, and only from 1 to 2 per cent. of wax, or paraffine residuum. If this analysis be taken as representative, the Cotabato oil must be considered abnormal and one that has lost some of its constituents in migration. It is probable that the oil-bearing rocks in this field are also Vigo shale, as is the case in Tayabas and Leyte.

The Cebu oil field can be considered to extend from the town of Alegria on the western coast of southern Cebu to the town of Toledo on the same coast. Petroleum indications are by a fairly strong seep at the head of Malbog Creek near Alegria and seepages near Toledo. The seeps are located on the upturned edges of beds of shales and sandstones (Vigo shale). This field was tested by drilling when Smith Bell and Company, Limited, of Manila drilled two wells near Iligan, a barrio of Toledo, in 1896. The wells reached a depth of 244 meters (800 feet) and 344 meters (1,128 feet), respectively. Petroleum was encountered and a small amount was produced, but with the coming of the insurrection all work was abandoned. The district has been idle since that time.

The Mindoro oil fields is located at the southern end of Mindoro, near Mangarin. Petroleum indications are by a number of seeps emanating from shales and sandstones (Vigo shale) located in small creeks to the northwest of Mangarin. These creeks are tributaries of Bugsanga River. Although geological exploration was carried on in this field, it has never been tested by drilling.

The Panay oil field is situated on the eastern flanks of the main cordillera in the central part of the island. Petroleum indications in this field are in the form of gas emanations which were encountered in Iloilo Province. The Vigo shales are present in this area and the presence of petroleum is not at all improbable. This district has never been tested by drilling, but in 1910 a well was drilled by the Bureau of Public Works for artesian water at Janiway, Iloilo Province, which reached a depth of 537 meters and emitted gas and salt water intermittently.

Philippine petroleum is light brown to wine red to violet in color. It has a paraffine base, and the paraffine content is usually high. It loses part of its lighter constituents readily upon exposure. The density of the oil ranges from 21 to 38° Baumé. (The density of Oklahoma oil ranges from 22 to 47° Baumé.)

The Philippine Islands has been importing increasing quantities of crude petroleum. In 1924 the total imports amounted to 4,105,819 pesos, and in 1925, to 4,853,587 pesos. Table 1, taken from the Report of the Insular Collector of Customs, shows the importation of "mineral crude oil" into the Philippine Islands.

TABLE 1.—"Mineral crude oil" imports into the Philippine Islands in 1924 and 1925.

Country of origin.	1925		1924	
	Quantity. bbls.	Value. Pesos.	Quantity. bbls.	Value. Pesos.
United States	1,117,851.54	3,609,179	1,122,799.89	2,307,071
Dutch East Indies	388,478.55	1,244,408	563,708.19	1,798,748
Total	1,506,330.09	4,853,587	1,686,508.08	4,105,819

In addition gasoline, kerosene, lubricating, and other oils to the amount of 13,105,529 pesos were imported in 1924, and 12,407,486 pesos in 1925. Table 2 shows this importation in detail.

TABLE 2.—Importation of gasoline, kerosene, and other oils in 1924 and 1925.

Product.	1925		1924	
	Quantity. Liters.	Value. Pesos.	Quantity. Liters.	Value. Pesos.
Gasoline and other motor spirits	48,315,968	5 652,435	38,873,404	4,912,598
Naphthas, other than gasoline	103,808	13,144	181,543	14,850
Illuminating, or kerosene ..	60,028,279	5,060,180	65,173,701	5,846,168
Lubricating	9,057,243	1,535,275	10,300,961	2,173,857
Residuum, including tar, and all others from which light bodies have been distilled.	1,783,243	146,452	1,549,461	158,056
Total	—	12,407,486	—	13,105,529

Engineering Notes

Japan's Road Building Program.—A comprehensive plan for road improvement and construction for the whole of Japan proper which contemplates the expenditure of more than \$1,000,000 over the next ten years, has been formulated by the Civil Engineering Bureau of the Home Department. The program will extend over 3,600 miles of road. Municipalities, prefectures and the national government are reported aroused to the necessity for providing for increased motor traffic.

Electrical (STATISTICS FOR TOKYO PREFECTURE.—The Tokyo Denkiyo Kumiai (Tokyo Electric Manufacturers' Association) reports statistics of the industry in Tokyo Prefecture for 1927, as follows:

Production of 88 mills (including 45 limited companies, 8 Goshi Kaisha, 35 individual concerns) was valued at a total of Y.126,514,024. Manufactures are classified in the following table:

Motors, Generators, Switchboards, Transformers ..	Y.72,727,773
Wire, Cable, Cord	103,127,161
Various Implements and Tools	10,608,220
Globe and Accessories.. .. .	13,077,390
Insulators (Porcelain)	2,623,984
Meters, Gauges.. .. .	3,721,474
Insulating Materials	2,873,096
Communication Equipment	13,414,649
Carbon, Electric Poles, etc.	1,238,505
Batteries, Dry, Storage, etc.	3,840,381

The authorized capital of the 88 mills was Y.183,156,000, of which Y.131,707,500 was paid in. Statistics for labor follow:

Total number of laborers employed: 38,179, including 26,809 men and 5,370 women.

Wages: Men: High Y.5.33, low Y.0.52 a day
 Women: High Y.2.80, low Y.0.48 a day
 Average: Y.2.44 a day

which is an increase over the Y.2.31 average for 1926, but less than the average of Y.2.68 for 1925.

Cars Oust the Riksha.—Everyone who has visited the Far East is familiar with that rather quaint, man-drawn single seater conveyance known as the riksha.

The anglicised "riksha" is nothing more than a corruption of the Japanese word rikisha, or, more correctly, jin-riki-sha, meaning man power vehicle, a term both compact and descriptive.

The origin of the rikisha is somewhat obscure, though it appears to have been brought into existence about sixty years ago. Be that as it may, this particular form of vehicle, which attained the height of its popularity about 1900, has been decreasing in point of numbers in Tokyo by more than 1,000 a year for several years, and there are those who declare that the day is not far off when the rikisha will have disappeared from the streets of the Japanese Capital entirely.

As recently as 1921 there were close on 18,000 of these man-pulled conveyances in Tokyo; yet by the end of last year the number had dwindled to less than 9,000, a reduction of over 50 per cent. in five years.

The rapid decrease is, of course, mainly traceable to the introduction of Western methods of rapid transit, such as the motor-car, the motor-bicycle, the tram, the train, and even the humble "push bike." The last-named is, in fact, a favourite means of locomotion in Tokyo, where, it is stated, bicycles rose in number from 19,923 in 1910 to no less than 426,862 by the close of 1926. Between these same two dates motor-cars in Tokyo increased from 96 to 13,000, while rikishas decreased from 26,792 to 8,776.

In the "good old days," when time was no object, the rikisha was used a great deal in Japan, not only as a means of transit in the towns and cities, but also for long distances.

Man-power is nowadays, however, a far more expensive commodity than it was ten or fifteen years ago, and consequently in nine cases out of ten it is both quicker and cheaper to hail a taxi or go by train or tram than to hire a rikisha.

Fushan Coal-field.—A new open-cut working was started at Yangpaipu at the Fushan coal-field on April 1. Stripping work is now in full progress and production is expected to commence in the course of the summer. The drainage and repair work at the South Oyama Shaft, which was flooded recently, has now progressed so far that about 700 tons of coal are produced daily.

Of nearly 500 victims of the disaster only 83 bodies have so far been recovered in the course of the restoration work.

The expenses for new installations at the colliery for the fiscal year 1929 have been fixed at Y.8,000,000 of which Y.3,000,000 has been allocated for the new open-cut working, Y.1,000,000 for the oil-shale plant, Y.1,600,000 for a new electric power house and Y.1,000,000 for public works.—*Reuter.*

Regulations for Road Construction in Nanking.—At a recent meeting of the Public Road Department and the Municipal authorities regulations governing the constructing of roads were adopted, giving special power to the Department to buy land for extension of old roads and the laying out of new ones. For widening roads, the authorities can clear five feet on each side without compensating the owners. But for every 10 square feet of building on the land \$10 is paid for tearing down and removal in the case of first class houses, and eight dollars for those of second class. Land beyond the limit of five feet will be paid a half of the estimated price. Graves and monuments are also to be removed if they obstruct the construction of roads. For every tomb removed, two dollars is paid. Public land or building will be used at the discretion of the Roads Department without paying any expenses.

Imperial Government Railways of Japan.—At the close of the year ended March 31, 1927, the Imperial Government Railways of Japan owned 8,008 miles of main line, branches, and sidings, an increase of 171 miles over the preceding year.

Operating revenue amounted to Y.7,023,606 (the yen, at average rate of exchange, equaled \$0.4741); other revenue, Y.11,700,130; operating expenses, Y.276,674,159.

The equipment in operation at the close of the year comprised 3,965 locomotives, 10,058 passenger cars, and 61,897 freight cars. During the year the following new equipment was purchased from foreign countries: 135 steam locomotives, 12 electric locomotives, 583 passenger cars, 89 tram cars, and 2,498 freight cars. The State Railways bought, from private lines, two steam locomotives, three passenger cars, and 13 freight cars. It is reported that 667 freight cars were rebuilt during the year.

The equipment of rolling stock with air brakes was furthered during the year, there being at the end of March, 1927, 2,399 locomotives, 762 passenger cars, and 60,267 freight cars equipped with air brakes. Of the total freight cars so equipped, 12,865 were fitted with air compressors. In Hokkaido all passenger cars are equipped with air brakes. The railway board made the usual repairs to rolling stock during the year and also installed electric heating systems on some 120 passenger cars.

During the year the railway board spent some Y.12,016,119 for electrical equipment such as improving electric car lines, installing steam electric generators, and building electric substations. A total of Y.10,850,000 was appropriated also for the construction of an electric power station at Tsurumi, Kanagawa-ken.

Private Railways.—There are 230 privately owned railways in Japan with a total mileage of 2,917. These railways are classified as follows: Steam, 1,317 miles; electric, 1,497 miles; steam and electric, 73 miles; gasoline, 30 miles.

Operating revenue for the year amounted to 68,676,905, of which amount passenger revenue was 44,304,082, and freight revenue Y.20,720,015. Other revenue amounted to Y.3,652,808. Operating expenses reached Y.37,715,019, and other expenses (interest on bonds, Y.9,977,379, and taxes and miscellaneous expenses, Y.3,553,728) totaled Y.13,531,107.

Private railways formed during the year totaled 31, and 166 miles of railways were built.

Far East Flight by Royal Air Force.—Four Supermarine-Napier flying boats of the Royal Air Force, each fitted with two Napier aero engines, are making a flight to Australia and the Far East.

These all-metal machines are flying in formation, and on February 27 had reached Singapore without mishap or trouble of any description.

By that time 10,625 miles (which means 85,000 engine miles) of the total distance of 23,000 miles had been covered by these aircraft.

Never before had an attempt been made to fly round India, and that the journey has been covered according to prearranged program and without mishap by four machines flying in formation, opens up possibilities of more Empire air routes.

This great flight further emphasizes the consistent reliability of the Napier "Lion" engine. This engine has already achieved flights to Cape Town and South America.

For one engine to carry out a long distance flight might depend upon luck, but for four machines, each with two engines, to fly in formation for 10,600 miles means that in the Napier "Lion" engine there is a method of locomotion comparable with any other form of transport.

Minami Chosen Tetsudo K.K.—(South Korea Railway Co., Ltd.)—Plans for this company were originated by Mr. Sakae Matsushita, now an auditor in the company and formerly an engineer in the services of the Government General of Korea. The project was supported by Mr. Iuemon Seki, formerly of Yachiyo Life Insurance Co., Ltd. and Mr. Kaiichiro Nezu who is now the president of the new concern. General meeting for establishment was held on January 14, 1928. (See Service No. 264 dated January 22, 1928, page 3.)

The company has licenses for four projected lines in Zenra Nando, in south Korea. They are:

Reisui-Juntan Line: 24 miles Nojo-Koshu Line: 35.7 miles
Juntan-Ryuto Line: 84 miles Ryutaku-Sanyei: 24.7 miles

Total: 168.4 miles

The whole construction will be divided into three sections: the first section being 92 miles starting from Koshu in the middle of the Keinan Line of Chosen Tetsudo K.K. (to be bought by the Government General in 1930) down south to Hojo, then east to Juntan and again south to Reisui. The second section is from Sanyei to Ryutaku and Hojo where the line will be connected with the first section. The third section will run from Ryutaku to Ryuto which is located on the opposite side of Moppo. Surveys are being made on the first section, to be completed in November this year. Construction will be started early next year.

According to the prospectus of the company, revenue is estimated at Y.34.63 per mile a day, expenditure at Y.19.03, balance Y.15.60 profit. The estimated profit is 4.7 per cent. of the construction cost of Y.118,000 average per mile. Along the route the population is dense and industry is comparatively well developed. The company's line will be connected with Keinan Line at Koshu, with the Moppo Line (Government) at Sanyei, with the projected line (Government) at Juntan, with ports at both ends Reisui and Ryuto to be developed in the future. Compared with Y.20 average income on the Keinan Line of the Chosen Tetsudo for the second half last year, the estimate of this company seems to be too high. The average income on the Zennan Line (Chosen) is not more than Y.27.50 a day a mile.

The estimated cost of construction of this company is also comparatively smaller than Y.164,000 of the Keinan Line and Y.137,000 of the Zennan Line, due to contributions for right of way already promised. Granting the income estimate to be too high, the company will be able to earn enough for operation and the government subsidy will ensure a dividend of 8 per cent. for the first 15 years.

The company has other plans: warehousing, hydro-electric power development and supply, development of farms, etc. Electric power will be developed on the Tanshinko River, estimated at 5,000 h.p. The Government General will assist land development for 30 per cent. of the funds required to make rice fields along the route.

The company is capitalized at Y.20,000,000, of which Y.4,000,000 is paid in; number of shares 400,000, of which 385,000 are subscribed by Japanese, the balance of 15,000 by Koreans. The railway will be operated by steam power, gauge 4-ft. 8-in., single track.

Japan's Road-Building Plans.—Owing to the rapid increase in use of motor vehicles in Japan, the Civil Engineering Bureau of the Home Department has formulated a comprehensive plan for road improvement and construction for the whole of Japan proper, which will require ten years for its completion and will extend over a length of 3,600 miles of road. It is expected that approximately Y.12,000,000 will be expended on the work during the first year. The municipalities, prefectures and the National Government are all aroused to the necessity of providing for increased automobile traffic, and the next two years will undoubtedly see some major road-improvement projects put into execution.

Lightning Fasteners, Ltd.—We have received for review from Lightning Fasteners Limited—a subsidiary company of Imperial Chemical Industries Limited—a copy of a most attractive book entitled "The Lightning Fastener and some of its Applications." All our readers must be aware of this fascinating device which is seen nowadays on golf bags, handbags, boots, shoes and in fact on almost everything that fastens.

We did not realize the number of applications which there are for this device until we had studied the book. Incidentally besides enumerating and illustrating all the applications the booklet contains detailed instructions for ordering lengths of the fastener and for fitting it, and also gives an interesting little glossary of the names of the component parts.

Copies of the book may be obtained from the Publicity Department of Imperial Chemical Industries Ltd. at King's Buildings, Smith Square, S.W.1. or from Lightning Fasteners Limited, Lion Works, Witton, Birmingham, who are ready to accept trade enquiries for any quantity of the Fastener.

We may add that the Fastener is made of rustless material and can be obtained in two colors of metal, both silver and gilt, and in almost any color of tape.

China Cotton Mill Statistics.—The following China cotton mill statistics for the latter half of 1927 were compiled by the Chinese Cotton Millowners' Association of Shanghai as per returns received:—

(1) *Number of Spinning Spindles:—*

	On December 31, 1927	On June 30, 1927	On December 31, 1926	On July 31, 1926	On January 31, 1926
Spindles in operation ..	2,932,889	3,135,330	2,307,634	2,066,996	2,031,212
Spindles in course of erection ..	25,820	5,800	7,600	13,112	2,000

(It is estimated that there exist in the whole country about 3,500,000 spinning spindles.)

(2) *Quantity of Cotton Consumed:—(in bales of 500 lbs.)*

	Half Year Ending				
	December 31, 1927	June 30, 1927	December 31, 1926	July 31, 1926	January 31, 1926
Chinese Cotton ..	409,410	498,363	421,567	426,762	361,859
American Cotton ..	139,399	153,391	76,217	57,573	27,893
East Indian Cotton ..	99,557	172,465	173,472	172,175	161,477
Egyptian Cotton ..	504	308	467	180	285
Sundries ..	184	1,135	447	260	70
Total ..	649,054	825,662	672,070	656,950	551,584

(3) *Cotton Mill Stocks:—(in bales of 500 lbs.)*

	On January 1, 1928	On July 1, 1927	On January 1, 1927	On August 1, 1926	On February 1, 1926
Chinese Cotton ..	49,146	186,138	102,727	131,996	100,953
American Cotton ..	44,030	61,481	33,846	26,834	18,810
East Indian Cotton ..	22,730	73,155	47,002	129,406	41,068
Egyptian Cotton ..	357	545	190	70	80
Sundries ..	80	1,124	49	180	11
Total ..	216,343	222,443	183,814	288,486	160,922

(4) *Short-Time:—*

	Half Year Ending				
	December 31, 1927	June 30, 1927	December 31, 1926	July 31, 1926	January 31, 1926
Number of spindles stop- ped ..	1,538,640	1,130,982	900,501	1,180,243	702,137
Average number of hours stopped ..	1,630	1,281	1,128	790	1,166
Number of weeks during which the spindles from which returns have been received were stopped ..	6.50	3.50	3.33	3.40	3.05

Kailu-Tungliao Railway.—Plans for the construction of the 198 li Kailu-Tungliao railway have now been completed and surveys made by engineers appointed by the Ministry of Communications. Initial expenses of \$500,000 will be advanced by the Ministry of Finance, and the Peking-Mukden Railway will supply two-thirds of the rails and ties. The remaining third will be taken care of by the Mukden authorities. Work is to begin sometime in May.

Motor Boating in Malay.—A Malay Marine Motorist speaks in enthusiastic terms of his Brooke "Empire" Runabout, and states that the craft is creating considerable interest amongst road users in Malay, being the first standardized launch built on motorish lines that has appeared there.

This "Empire" Runabout, a 10-h.p. four seater 16 M.H.P. craft equipped and run like a car, is claimed to be the most up-to-date craft of its type produced in England.

The makers Messrs, J. M. Brooke & Co., Ltd., of Lowestoft are steadily increasing their Overseas business with this model—a standardized boat—which they are now supplementing with their seven seater launch, on similar up-to-date lines, but driven at 30 M.P.H. by a 100-h.p. Brooke engine of new design.

Shikisan Denki Tetsudo K.K. (Shikisan Electric Railway Co., Ltd.) A New Company.—A general meeting for establishment of the company was held on May 19. Promoters are the Osaka Denki Kido K.K. and Shiki Ikoma Dentetsu K.K. Details are as follows:

Capital: Y.750,000, paid in Y.187,500.

Management: President: Torao Taneda. Special Managing Director: Sadasuke Yamaguchi. Directors: Oto, Araki. Auditors: Takakuwa, Nakatani. Advisors: Mitsuaki Ota and Mataichiro Kanamori.

The company plans to construct an electric railway and cable-way between Nishiguchi, at the foot of Mt. Shiki and the Yamamoto Station on the Onchi Line of the Osaka Denki Kido K.K.

Notes on some New Companies:—Tokyo Omiya Denki Tetsudo K.K. (Tokyo Omiya Electric Railway Co., Ltd.) A general meeting for establishment of this company was held on April 10. Chairman of the organizing committee Mr. Tsunehei Moroi reported details and following plans were made for establishment:

Capital: Y.6,000,000.

Number of shares: 120,000, Y.50 a share.

First Payment: To be called, Y.5 a share.

Bonus for Directors: To be less than Y.30,000 a year.

Officers were elected, as follows:

President: Tsunehei Moroi, Special Managing Director: Sanehiro Tanabe, Iyeji Uemura, Shiro Yamazaki.

Directors: Gosuke Imai, Shintaro Ohashi, Tatsutaro Hara, Noboru Oka, Mataichiro Kanamori, Naokata Kataoka.

Auditors: Mitsuteru Ota, Yajuro Namiki, Sumisaboro Uemura. Sunfu Denki Tetsudo K.K. To Start Construction (Sunfu Electric Railway Co., Ltd.)

Subscription to shares of this company has been completed recently. Construction of the projected line of 15 miles 10 chains between Mumazu City and Iriyamase Station on the Fuji Monibu

Tetsudo K.K. line will be started some time in September this year, to be completed before the end of May, 1929, at the latest. Power will be bought from Tokyo Dento. The company is capitalized at Y.1,800,000.

Kwanto Suiryoku Denki K.K.—(Kwanto Hydro-Electric Power Co., Ltd.)—The shares of this company have been rising recently, from the low rate of Y.16 to about Y.20 on Y.30 paid issue. The price is still comparatively low.

This company is now constructing a hydro-electric power station on the Tone River, capacity rated at 66,000 k.w. The foundation work has been completed and the remaining construction is expected to be completed before November this year.

The cost of construction is estimated at a total of Y.25,000,000, compared with the authorized capital of Y.17,000,000 of which Y.10,200,000 is paid in. This company raised a Y.10,000,000 loan from trust companies, interest at 7.3 per cent. at the end of February. This company expects to call up capital at the rate of Y.10 a share or a total of Y.3,400,000 before long. The ten million yen loan matures in one year, when it will probably be replaced by a debenture issue.

Power to be generated will be sold to the Tokyo Dento. The operating capacity is estimated at 55,000 k.w., to be sold in three parts, 18,300 k.w. for the first year, 36,600 k.w. for the second year, 55,000 k.w. for the third year. The price is contracted for at Y.80 a k.w. a year. Tokyo Dento is likely to ask for a reduction, but will probably be refused, although some reduction is expected to be inevitable.

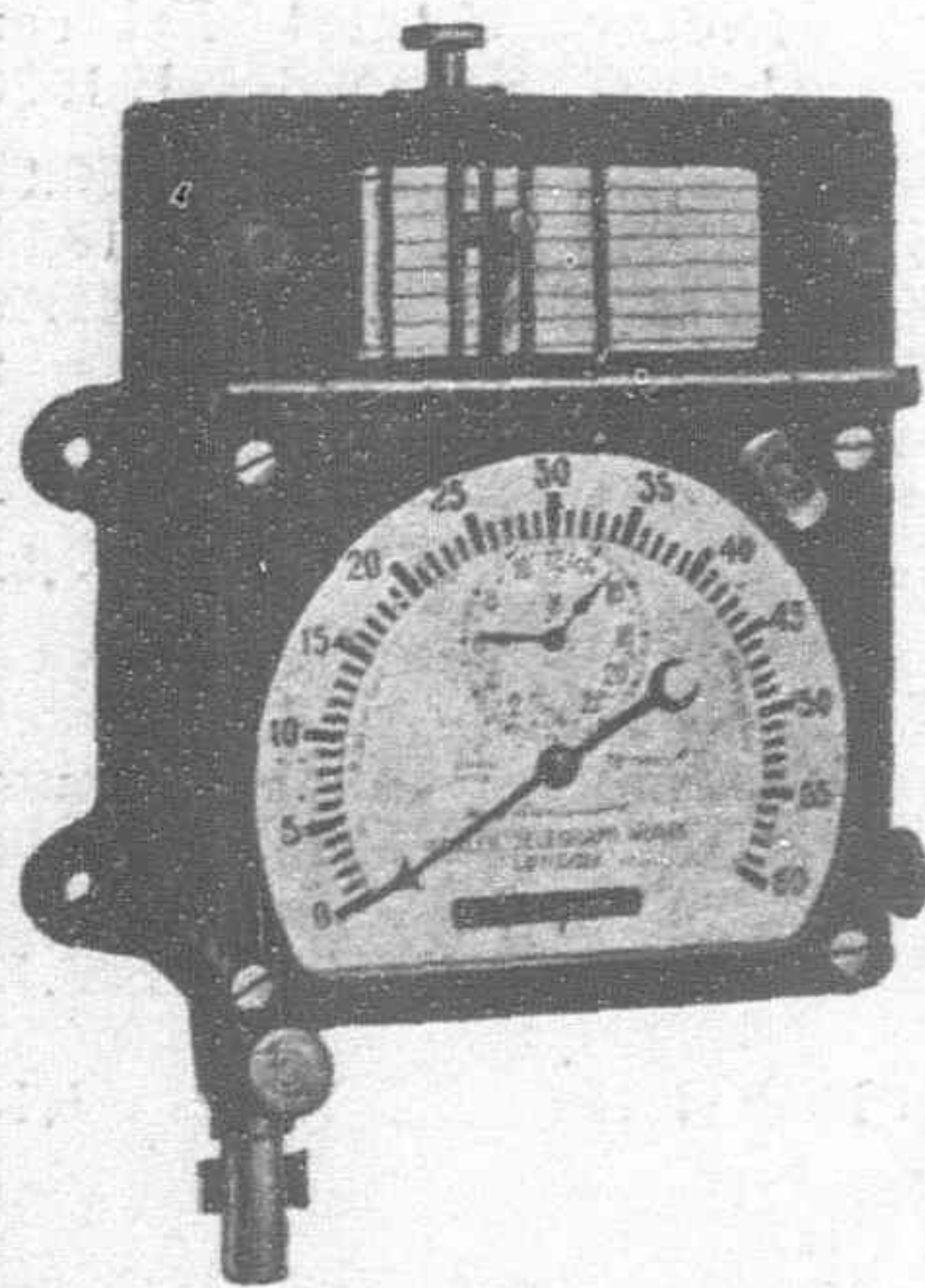
On the basis of the present contract, power income may be estimated as follows; the first year is not considered.

Second Year:	Power Income	..	..	..	Y.2,933,000
	Operating Expenses	..	..	..	800,000
	Interest to be paid	..	..	..	740,000
	Balance Profit	..	..	..	1,393,000
	10.2 per cent. of the paid in capital of	..	..	..	Y.13,600,000
Third Year:	Power Income	..	..	..	Y.4,400,000
	Operating Expenses	..	..	..	800,000
	Interest to be paid	..	..	..	740,000
	Balance Profit	..	..	..	2,860,000
	21 per cent. of the paid in capital of	..	..	..	Y.13,600,000

For the second year a dividend of 7 or 8 per cent. will be possible, for the third year of more than 12 per cent. a year, provided no further call be made. At 10 per cent. reduction in price, the estimate will be as follows:

Second Year:	Power Income	..	..	..	Y.2,640,000
	Operating Expenses	..	..	..	800,000
	Interest to be paid	..	..	..	740,000
	Balance Profit	..	..	..	1,100,000
	8 per cent. of the paid in capital of	..	..	..	Y.13,600,000
Third Year:	Power Income	..	..	..	Y.3,960,000
	Operating Expenses	..	..	..	800,000
	Interest to be paid	..	..	..	740,000
	Balance Profit	..	..	..	2,420,000
	17.5 per cent. of the paid in capital of	..	..	..	Y.13,600,000

For the third year a dividend of 12 per cent. a year will be practicable, at which rate the present price of Y.20 on Y.30 paid shares is comparatively low.



THE BEST LOCOMOTIVE SPEED INDICATORS & RECORDERS

WITH CONJUGATE MOVEMENT

TELOC TYPE

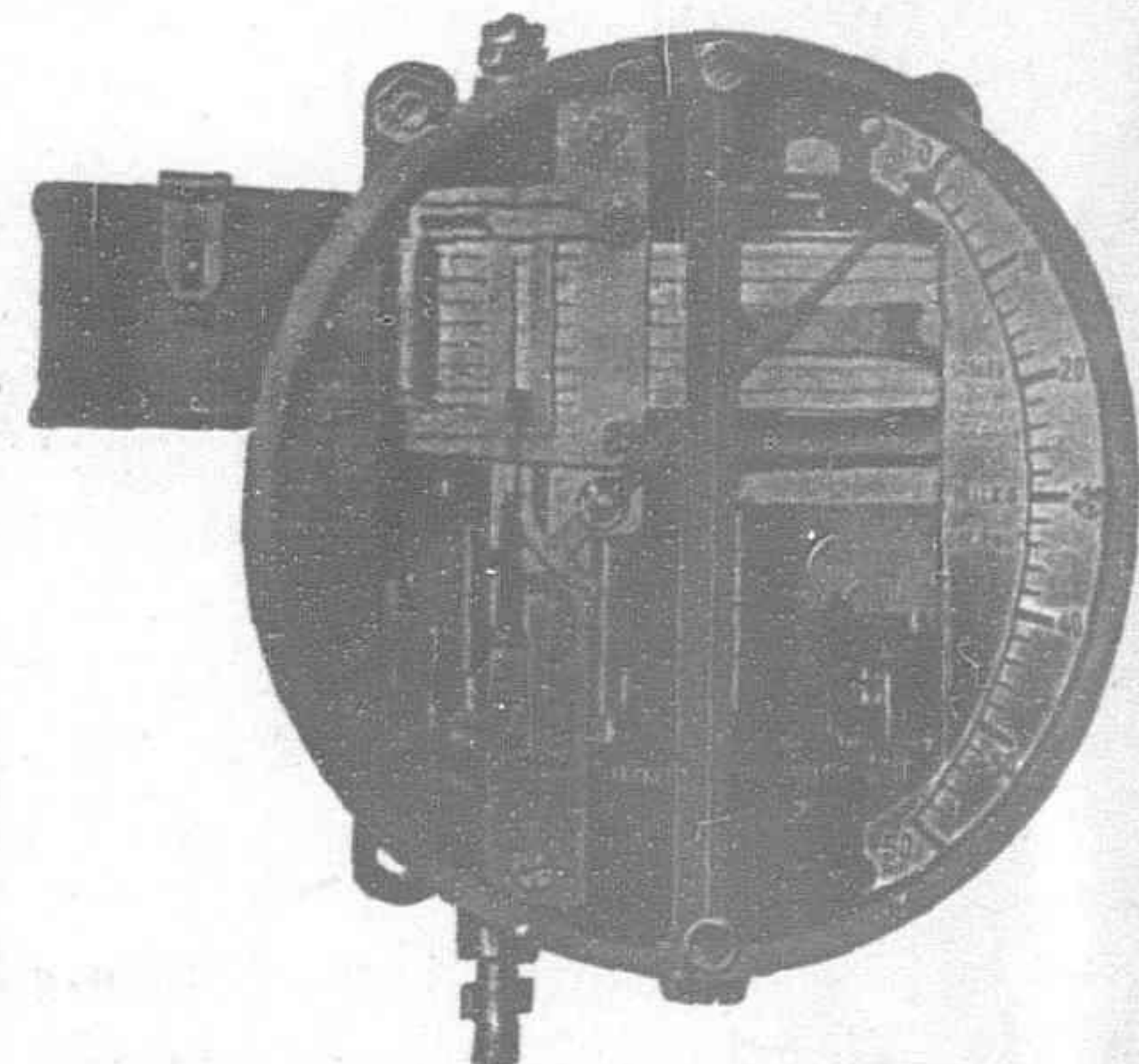
Chart Feed on a Mileage Basis of 10 m/m per Mile.

INDICATES:—Speed.
Total mileage since application of instrument.
Total mileage of each run.
Time of Day in Hours and Minutes.
RECORDS BY SILVER STYLUS:—Speed attained at any point of run.
Time the engine or coach is at work.
Distance covered.
Duration (up to 24 hours) and point of stops.
Time of Day in Hours and Minutes.
If desired apparatus to record working of Westinghouse or Vacuum Brakes.

HASLER TYPE

Chart Feed on a Time Basis of 4 m/m per Minute.

INDICATES:—Speed.
RECORDS BY NEEDLE PUNCTURES:—Speed attained at any point of the run.
Time the engine or coach is at work.
Distance covered.
Duration and point of stops.
If desired bell can be fitted to ring at predetermined speed, or apparatus to record working of Westinghouse or Vacuum Brakes.



HASLER TELEGRAPH WORKS, 26 VICTORIA STREET, LONDON, S.W. 1

Agents in China: WILLIAM FORBES & CO., PEKING